

S I N C L A I R

Every month £1.45 April 1989



WORLD

DIY TOOLKIT — TASK FORCE

Multi-task the
Psion Four
and other
bad-
tempered
software

UPDATE — TEXT '87

What you see is
what you
really get

EXPERIMENTAL CIRCUIT

On-screen hardware control

REVIEW

ABC Mega-RAM Board



PROGRAM OF THE MONTH

The Business Game



PERSONAL COMPUTER PRODUCTS

**NORTHCOTE CRESCENT (04865)
WEST HORSLEY 3836
SURREY KT24 6LX, U.K.**

WARNING — GUARANTEE

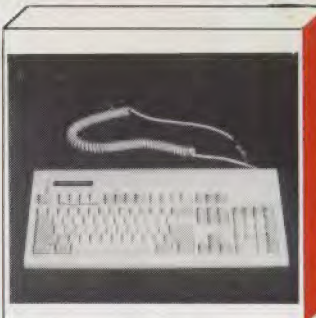
MAILING LIST OFFER. We sincerely hope that you are aware of the forthcoming withdrawal of QL World from the newstands. We therefore strongly advise you to contact us if you wish to be informed of any new developments (and there are many) as and when they arrive.

Please drop us a line as soon as 'snail mail' allows and we will add your details to our database. We have some superb new products arriving soon from the Continent, so be sure that you are contacted. We guarantee that all customers on record will be informed of new products that are selected to be in our range!!!



SCHÖN STANDARD KEYBOARD

The most popular add-on keyboard for the QL. Same key layout as original but incorporates full travel, two-shot moulded keys. Expansion, ROM ports and microdrives unaffected. Comes complete with anti-bounce device and QL top cover including LED's. Simple installation. No soldering, 5 mins. Please call for free spec sheet. Both keyboards have 1 yr+ guarantee. **Fantastic value at only £35.00 inc VAT.**



SCHÖN PS/2 STYLE KEYBOARD

The absolute ultimate add-on keyboard is now available for the QL. The Schön PS/2 style keyboard. It is the perfect tool for the discerning QL enthusiast and has many extra keys. In total the Schön PS/2 style keyboard has 102 keys and includes separate numeric and cursor pads, Home, End, Page Up & Dn, Del & , SKIP & SOLN, EOLN, RECALL, Caps, Scroll & Num Lock (illuminated), SYS REQ, BREAK, Del Line, diagonal cursor keys AND yes... **SINGLE KEY UNDERSCORE!!** R.R.P. £114.95 includes I/F and QL top cover with LED's. **CALL NOW FOR FREE SPEC SHEET.**



SCHÖN KBL 128 QL CASING

This is a special product intended for the enthusiastic QL owner with electronic knowledge. The KBL 128 comprises of an inner metal chassis and a strong outer ABS casing. Complete with 64 way 'flip-back' connector to allow expansion devices to sit on top of the QL PCB. Casing is suitable for QL PCB, drives, PSU, and all expansion devices. A highly rewarding DIY challenge for the QL owner with the '4ft long' problem. Works superbly in conjunction with the new Schön PS/2 style keyboard. Call for spec sheet and chat about converting your QL. **R.R.P. £65.00 including VAT.**

SOFTWARE DISKTOOL By ULTRASOFT

A useful budget priced piece for the QL which uses the QJump Pointer Environment. Fully multi-tasking and accessed via HOTKEY, Disktool enables formatting disks to a capacity of 752k (1512 sectors). Other features include disk password protection and hyperfast single or double drive copying. Comes with Pointer Environment and CONFIG program. **R.R.P. £9.95. Call for details.**

NEW SOFTWARE NEW CARD By ULTRASOFT

Card is a small user-friendly database utility to handle simple database applications. Features include:—
* Compatible with QJump Pointer Environment
* Dynamic memory allocation
* Fast SEARCH and SORT algorithms
* Fully multi-tasking
* 100% machine code
* HOTKEY accessible
* On-screen HELP facility
Card comes complete with Pointer Environment and CONFIG program and is available on 3.5" disk for £14.95. Please call for details.

SOFTWARE TOOLKIT III By ULTRASOFT

Toolkit III is the ultimate enhancement for Super Toolkit II. Features include:—
* Fully operational sub-directory structures
* New file attributes: READ ONLY, USER AREAS, etc.
* Unique MEM device to access memory as a file
* Fast and flexible database commands
* Extensions to old Superbasic and TQ2 commands.
* Commands for advanced memory access
* 100% compatible to QJump Pointer Environment
Available on 3.5" for £19.95 or EPROM for £24.95

TRANSFORMER

The only alternative full blown IBM PC/MS DOS emulator for the QL. This previously unadvertised product is a complete, professionally written ROMable code program which gives your QL a PC environment. The transformer naturally supports both CGA and MDA fully and comes complete with PD software to show its full potential and speed. The transformer shows yet again the quality of continental programming and should be available from the beginning of April. It can be seen running at The Alternative Micro Show (Stands A6, A7, A8, A9).

To avoid public confusion we must stress that this product is a totally NEW product and is in no way related to so-called PC emulators advertised by other companies.

EXTRAS

EXTRAS FOR SCHÖN PRODUCTS

Anti-bounce Device (for Schön Standard Keyboard)£6.00
Black PVC Dustcover for PS/2 Style Keyboard£4.95
12 V Slimline cooling fan for use with Schön KBL 128 Casing£24.95
All 'extras' prices include VAT and P&P

NEW SOFTWARE NEW

The latest piece of professional software from the Continent to become available in the U.K. The Painter is a totally new, totally complete user-friendly graphics/CAD package for the QL. All menus are full screen and icon controlled. The Painter allows up to 12 full screens to be designed at once in 4 or 8 colours. * User variable zoom command * Spectacular screen edit facility for close up full cover pixel work (displays mini-

ture full screen simultaneously) * Work screen/menu screen wrapping is instantaneous * Normal drawing commands (line, square, circle, etc; as well as more unusual requirements) * Requires at least 256K and comes on 3.5" disk complete with manual. All drawings produced on The Painter can be incorporated in other graphics/DTP programs. The Painter retails at £29.95 including VAT. Please call for more details.

PRODUCT & CARRIAGE COSTS

Schön Standard Keyboard£35.00 P&P @ £2.00
Schön PS/2 Keyboard£114.95 P&P @ £3.00
Schön KBL 128 Casing£65.00 P&P @ £3.00

All software advertised is priced as stated above. Postage is included on all software. Overseas customers please call for export prices. European customers contact **Ultrasoft, Vennhauser Allee 218, 4000 Dusseldorf 12, W. Germany.** All software is supplied on 3.5" unless otherwise stated.

MS DOS is a trademark of Microsoft Corp.
PS/2 is a trademark of IBM.

ORDER FORM/DATABASE FORM

Please send me the following product(s) to the address below.

Product(s)
Mr/Mrs
Address
.....
..... P/Code
Tel Amount Enclosed £.....

Please tick box for database inclusion ☐
PLEASE REMEMBER POSTAGE!! and don't forget to get on our product database.
Please allow up to 28 days for delivery.

Editor
Helen Armstrong

Chief Sub Editor
Harold Mayes MBE

Production Manager
Nick Fry

Designer
Chris Winch

Advertising Sales
Judi Gallon
Robert Cole

Magazine Services
Sheila Baker

Advertising Production
Kit Hoare

Managing Editor
Brendon Gore

Publisher
Perry Trevers

*Publishing and
Commercial Director*
Paul Coster

Financial Director
Brendan McGrath

Chief Executive
Richard Hease

Microdrive Exchange
089 283 4783/2952
(2 lines) TIL

Sinclair QL World
Greencoat House
Francis Street
London SW1 1DG
Telephone 01-834 1717
Fax 01-828 0270
Telex 9419564 FOCUS G
ISSN 026806X

Unfortunately, we are no longer able to answer enquiries made by telephone. If you have any comments or difficulties, please write to The Editor, Open Channel, Trouble Shooter, or Psion Solutions. We will do our best to deal with your problem in the magazine, though we cannot guarantee individual replies.

Back issues are available from the publisher price £2 U.K., £2.75 Europe. Overseas rates on request. Please telephone 089 283 4783 to check availability.

Published by Focus Magazine Ltd., London. S M Distribution, Streatham, London SW1.

Subscription information from: TIL, PO Box 74, Paddock Wood, Tonbridge, Kent TN12 6DW.

£15 U.K., £30 Surface mail Europe and the rest of the world. Add £5 for air mail + £10 overseas.

Typesetting by Adtec Typographics, Stanford-le-Hope, Essex.
Tel: (0375) 360967.

Printing by Southernprint Ltd.
©COPYRIGHT SINCLAIR QL
WORLD — 1989.

CONTENTS

■ ■ APRIL 1989

- 9 **QL SCENE** ● How many emulators?
- 10 **OPEN CHANNEL** ● Fast talking
- 12 **ABC MARK III** ● Outboard keyboard
- 16 **SOFTWARE FILE** ● Treat the Mega-Ram tenderly
- 18 **TEXT '87** ● What you see is what you get
- 24 **PSION SOLUTIONS** ● Looking for lost files
- 26 **DIY TOOLKIT** ● Taskmaster whips into shape
- 30 **SCREEN CONTROLLER** ● Screen to hardware stitchup
- 34 **SUPERBASIC** ● Part 2 of the calculator project
- 38 **PRINTER REPORT 3** ● The last of the present batch
- 41 **PROGRAM OF THE MONTH** ● The Business Game
- 46 **MICRODRIVE EXCHANGE** ● Multiple microcassettes



NEXT MONTH

LET US EMULATE

We present the first comparative review of two QL MS-DOS emulators.

IT MUST BE A FLASHBACK

Bryan Davies looks at the latest version of an increasingly popular program.

THE SOLUTION — IBM PC EMULATOR

THE SOLUTION is Digital Precision's brand new PC Emulator System. By emulating an IBM PC as exactly as possible, **THE SOLUTION** enables its users to make their QL into a PC clone — no ifs, maybes or almos. **THE SOLUTION** is available now!

A full technical specification of **THE SOLUTION** appeared in the February issue of QL WORLD. We now answer your most common questions on the subject.

Q. Do I have to know anything about QDOS, MSDOS, PCs or programming to use THE SOLUTION?

A. No. Nothing at all.

Q. Do I need any hardware to run THE SOLUTION?

A. THE SOLUTION is purely software — there's no hardware to muck up your system. To run **THE SOLUTION** you must have at least one disk drive and at least 256K RAM expansion. If you have a 640K QL you have over 450K free for MSDOS and your programs — loads of room. And if you have a TRUMPCARD, you have more RAM available to MSDOS than on a big PC! If you don't have disks or expansion RAM, we can supply you with both at very competitive prices. And we don't stock anything but the best. Today's "bargain-price" hardware is all-too-often tomorrow's tragedy.

Q. How compatible is THE SOLUTION?

A. THE SOLUTION will run all properly written PC programs: that is, all programs that adhere to IBM's specifications. All the well-known and popular programs for the PC are properly written — if they weren't, their manufacturers would be swarmed with complaints from people who couldn't run the software on their particular brand of clone. It is a "chicken and egg" situation — it is because the sensible manufacturers don't break the rules and write software properly that they get to be famous in the first place!

Q. Can I have that again, in English this time?

A. Programs that break the rules, by making direct access to hardware and bypassing the BIOS, are the cause of problems. But these are programs that don't give just us headaches, they also won't work on many PC clones as well! It is impossible to guarantee compatibility with such naughty programs — but **THE SOLUTION will have a good try to auto-guess what is expected of it, and will hence run the overwhelming majority of naughty programs too. Again, our emulator is no more fussy than many clones (including the unmentionable!) and less fussy than some of them.**

Q. Naughty programs?

A. Software that breaks IBM specifications is invariably written either by people who didn't know better (this software is only found at the bottom of the public domain league-table — our advice is to steer clear of the super-cheap!) or by people who wanted to maximise speed (direct pokes into screen RAM, etc.) whatever the consequences — invariably these are games. Our test suite comprises 100+ programs, even including a smattering of games. **THE SOLUTION works with all of them, perfectly. Of course we've tested it on BASICs, other high level languages, compilers, assemblers, monitors, databases like dBASE and Framework, spreadsheets like Lotus 1-2-3, Symphony and Supercalc, word processors like Wordstar, Superwriter, Word Perfect and loads of applications programs. For heaven's sake don't think this is a complete list. There isn't a single PC program we've encountered — and our betatesters have had access to hundreds — that has given a problem that we haven't traced either to a proven and demonstrated bug in "their" program (that causes a problem with a clone) or a bug — fixed by us in minutes — in our test version. There is no third category. The bottom line? Run garbage and you just might get hassles, but no more than you would get with a clone. In many ways, we are more PC compatible than the famous brand PCs. Run half-decent software and you won't. **THE SOLUTION** is super-compatible.**

Q. How fast is THE SOLUTION?

A. How long is a piece of string? As we are emulating an 80x80 CPU, different 80x86 instructions translate into a different set of M68000 instructions. **THE SOLUTION is hand-written in optimal machine-code, so it goes as fast as is possible.**

Q. Don't avoid the question.

A. THE SOLUTION runs with most programs, at about 10%-20% of the speed of an XT. Usually it will more than double this, and if you have an ST QL Emulator or fast THOR, you can increase our speed figures to 250%-300% of their values. But on a QL we have found the speed very acceptable for the vast majority of applications, and adequate for everything (except zap-em-up games). And if your PC software involves a significant "human input" component, you may find no significant difference at all between the speed of **THE SOLUTION** and that of a fast PC. If you want even more speed, we strongly recommend you buy LIGHTNING together with **THE SOLUTION** — we haven't reinvented the wheel in **THE SOLUTION**, which consequently benefits from LIGHTNING technology. Remember the 10% discount when you buy LIGHTNING.

Q. You mean I boot up THE SOLUTION, and then my QL is a PC. Can it really be that simple?

A. That is simple. You will get your DOS prompt, A> or whatever, and after that you can forget you are on the QL. Disks you read from and write to will be in MSDOS format from here on — so you can directly read that data you wrote at the office, and after you have finished and saved your work to disk you can take the disk away and read it and manipulate it on your PC. As long as you are inside **THE SOLUTION, the QL is a PC.**

Q. Isn't the keyboard different? What about F6 . . . F10, PgDn, PgUp, DEL, INS etc, which are not QL keys?

A. Come on — it is Digital Precision you're talking to! We've remapped the keyboard — all IBM keystrokes are supported. You can reconfigure all the keys, too. So if you want (say) CTRL/DOWN to give PgDn, you can set it.

Q. What size drive?

A. Any. We can supply on 3.5" or 5.25", single or double sided, single or double density. Just tell us what you want. And if you have a QL with (say) 3.5" disks and want to use 5.25" IBM disks (IBM disks are available in both sizes, so this should not be a problem — but perhaps your office computer has only 5.25"), we can either sell you a 5.25" drive or a combined 3.5"/5.25" switchable drive, arranging a part-exchange with your existing hardware if you wish. Our prices are very competitive and we only supply NEC industrial quality goods. One thing — don't opt to format you IBM disks to quad-density (an option available on the latest PCs only) as QL drives can't read at that density).

Q. What peripherals can I use?

A. Obviously, you can't plug in IBM hardware cards! But printers, modems, other communications hardware like terminal emulators (yes, we do maintain the baud rates!), mice (that mimic the keyboard) etc. all work. As our devices are reconfigurable, all sorts of possibilities arise, including the use of ramdisks, spoolers and other QL devices. You have total freedom.

Q. Miracle have announced a hard disk. Comments?

A. We love Miracle too. **THE SOLUTION will support it via a module that we will market within a few weeks of the delivery to us of the hard disk, which is expected sometime in April. At present we are planning to allow disk partitioning, so rather than either QDOS or MSDOS grabbing all of the hard disk, you can allocate a % of it to each of them. 10% off **THE SOLUTION** if you buy it and the Miracle hard disk from us.**

Q. Do I get colour too?

A. Of course. Full CGA-standard emulation (loads of smart software that took us ages to do!) is provided, with no need for accessories! Monochrome and block graphics are obviously also supported. **SOLUTION works perfectly with CAD, graphics and DTP systems as a consequence — truly amazing!**

Q. What versions of MSDOS will THE SOLUTION work with?

A. Virtually any version! We have tried even ancient, 5-6 year old versions and they work with **THE SOLUTION. But you may get problems running some programs (not our emulator), which take advantage of recent DOS amendments, with old MSDOS versions — again, no more than you would get on a clone.**

Q. Do I need to use Media Manager or Discover with THE SOLUTION?

A. No. **THE SOLUTION provides full function disk formatting and file copying of files from QDOS to MSDOS format and back, via a separate stand-alone QDOS utility that is very fast. **THE SOLUTION** even copes with anomalies that arise with 40 track disks in 80 track drives. The beauty of all this is that you can use our superb EDITOR program — either standard or Special Edition — to manipulate IBM files very easily. EDITOR format is perfectly compatible with Wordstar/Superwriter etc format, so work is transportable to and from Editor with perfect ease. We give a £10 discount on Editor when bought with **THE SOLUTION**.**

Q. Does this mean Digital Precision prefers MSDOS?

A. You must be kidding, that is why we have made **THE SOLUTION fully and natively multitasking. If you wish, you can run more than one PC program together, or PC and QL programs simultaneously. It is exactly as you would expect, the only difference being that to multitask from **THE SOLUTION** CTRL/C is not used (because it has a meaning under MSDOS) but instead SHIFT/CTRLC.**

Q. I've heard of another emulator. . .

A. So have we. We wasted a day looking at the latest shipped version, and could get it working — after some considerable effort — with only two of our 100+ test programs, and with neither of these completely correctly. The rest all crashed or hanged! There was no support for CGA! Monochrome support was ridiculous — no sub-screen scrolling, no multiple display pages, no reading of characters back off the screen — we have a suspicion that only teletype mode (no cursor repositioning traps honoured!) was supported, which is why the 2 programs we were able to load spattered output higgledy-piggledy all over the screen. It wouldn't work with TRUMPCARD. It won't multitask — when we forced it to, it hanged the QL. It crashed on CLS, and an any access to drive B:. The keyboard — contrary to claim — isn't configurable, and many key combinations are inaccessible. Using RJOB on it soon hangs the QL, indicating the extent to which it has corrupted the entire machine. No facility is provided for moving data or files to or from QDOS. DATE seems to return random characters. Error trapping resulted in a hang. Even DEBUG wouldn't work, MODE COM1:96 returns "com1 is a bad parameter". There is no method to allow you to reduce/control the amount of RAM scavenged by the "emulator". Benchmarking this very problematic — you don't measure time to completion, only time to crash — but on the few things that worked it appeared to be a third of the speed of **THE SOLUTION (MASM assembler time 96 seconds with our one, 253 seconds with their one — judging by their seven minutes plus for a 360K disc formatting a 720K disk would take over 12(11) minutes on their system if a bug that prevented the latter happening was fixed!**

Our opinion is that it is a disgraceful program, one of the worst we have ever seen. Undoubtedly it will improve — it could hardly get worse, but it won't be usable. The ultimate insult is the manual (under 4 pages of Quill.doc file plus one twelve-line memo) from which we quote verbatim "It is not too difficult to crash the emulator!". It "still contains quite a few problems", "it is fine when using DOS and small packages," (untrue anyway, but revealing, as all PC packages are large!). Not even could we get any BASIC (we tried five!) to work with their emulator — no input was possible, so you could not EDIT, LIST, RUN, etc. Even 10 FOR I=100 yielded a "type mismatch" error! Not a single program we tried — even one line-ones failed to crash. Phil Borman, the Secretary of QUANTA, the Independent QL User Group, stated to us on 1/3/89, "I could get no PC programs to work under that emulator." One of QL World's technical reviewers admitted that he had spent a whole day with it and had failed to manage to get any PC program to function at all (let alone function properly!). We know that QUANTA and QL World have both received many angry complaints from customers who got "caught" — we've received quite a few (unsolicited) stories already all saying the alternative didn't work at all. Finally, one of the independent sources mentioned earlier stated that what we have said about the so-called alternative is mild compared to what should have been said . . . 'nuff said.

Q. We have heard what you have to say. What do others think?

A. We understand that reviewers for QL WORLD, QUANTA and other magazines were very impressed with **THE SOLUTION.**

Q. What is the difference between the two flavours of THE SOLUTION?

A. The emulator is identical. The sole difference is that with the CHOCOLATE SOLUTION you are supplied with a complete MSDOS V4.0 — including all system documentation, loads of wonderful Microsoft paper, etc. **THE VANILLA SOLUTION costs £79.95 — you've got to buy a DOS for yourself. **THE CHOCOLATE SOLUTION** costs £129.95, just £50 more — that compares with a dealer price for over £90 for MSDOS alone! And 10% off everything if you buy LIGHTNING at the same time.**

THE EDITOR SPECIAL EDITOR

Text handling par excellence

These are the ultimate file-handling programs for your favourite computer. A new concept in hyperspeed information manipulation, Editor serves as a word processor, printer driver, database and programming environment. You name it, Editor does it. Its logic and consistency of approach put Editor in a class of its own. Special Editor only works on expanded machines – it takes the QL to its very limits, and is ideal for handling documents, manuscripts, books etc.

TURBO

The supreme SuperBASIC compiler

Turbo is compatible with the entire syntax of SuperBASIC. Its friendliness, features, tolerance, flexibility and fast operation are legendary. TURBOcharged programs run up to 100x faster than BASIC ones. TURBO is supplied with a general-purpose, two-hundred command toolkit.

LIGHTNING

The complete QL speed enhancement system

Lightning accelerates the QL's text, graphics, screen and mathematical operations by mind-blowing factors of up to 14x. No technical knowledge or programming is required. Simple to use, but with many bells and whistles - 78 fonts, new nul device, user-variable precision, character-drain, modechange suppression...

**PRICES
SLASHED!**

DESKTOP PUBLISHER DTP SPECIAL EDITION

These programs provide wysiwyg document design, with a huge number of RAM and device resident lo-res and hi-res fonts, continuously variable X & Y magnification, compatibility with Editor, Quill and Eye-Q, a preview function, comprehensive graphics facilities, flexible cut & paste, pixel justification etc. Both versions require expansion RAM, and Special Edition is disk only. The Special Edition is supplied with a free copy of grafiX, the well-known PDQL printer controller. Both versions work best with Eye-Q and Editor.

**PRICE
SLASHED!**

DIGITAL C

A C compiler for beginners

Truly portable, but carefully tailored and optimised to produce fast, concise code on the QL. No cash crop conversion this!

SUCCESS

The supreme CP/M Code Emulation System

Converts the QL into a fully compatible CP/M operating environment. No ifs, buts or alms. Run thousands of the world's favourite programs on your QL NOW! Emulates Z80 too!

IDIS

The first intelligent disassembler for the QL

The ideal disassembler for beginners – with IDIS you do not need to be an expert to crack other people's programs

For full program
specifications refer to
the July 1988 QL World

£10 off The Editor and/or ACT Special
Edition if bought with anything else

3D PRECISION

A dream to use

Provides every facility for swiftly designing and manipulating three dimensional objects in real time. You have complete control over perspective, magnification and position, and you can create lines, surfaces, objects and worlds (groups of objects). Needs extra RAM..

MEDIA MANAGER SPECIAL EDITION

NEW

Media Manager is a very early DP release with oodles of functions. However, the design and user-friendliness of the system was not quite up to the standard of Digital Precision's other programs.

Consequently, we have spent a great deal of time rationalising and improving Media Manager, making it much easier to use, much faster, more powerful and more flexible. The result – Media Manager Special Edition. A classic release, a must for everyone who uses the QL to store things of value. Not that MMSE is just for when things go wrong – it is a manager too, with a host of medium control functions. And if you can program, we've supplied SuperBASIC extensions for every conceivable device control.

Additional features include the facility to read from, write to (and even format) IBM MSDOS/PCDOS disks and Atari TOS disks – two-way access both at sector-level and at file-level.

MORE SUPER SPECIAL DEALS

We want to encourage more and more users to experience for themselves the stunning acceleration imparted to the operation of all Digital Precision programs (and everyone else's programs) by LIGHTNING. Programs that particularly benefit are editing/word processing programs, databases, graphics/CAD programs, desktop publishers, compilers, games and programs with a high computational overhead (like astrological systems). We will give a 10% discount, additional and supplementary to all other discounts, for any purchase of two or more programs, if one of them is LIGHTNING. This discount applies to the total price – it is not just 10% off LIGHTNING but 10% off the lot!

DIGITAL C SPECIAL EDITION

NEW

Digital C Special Edition has all the features of the much-acclaimed Digital C System, plus:

- ★ Direct access to all QL traps and vectored utilities is provided.
- ★ Machine code has now been used for writing all the standard library functions – this maximises execution speed and minimizes code size.
- ★ Huge programs can be compiled – no 64K or other code size limit.
- ★ Many new fast library functions including SCANF are supplied.
- ★ User selectable size optimisation gives the choice of efficient 16 bit and flexible 32 bit addressing.
- ★ Long integers are now supported.
- ★ Long pointers are now supported.
- ★ Long constants in octal, decimal and hex are now available.
- ★ User friendliness is improved.

PROFESSIONAL PUBLISHER

NEW

Digital Precision is proud to announce an all-new, top-of-the-range desktop publishing system.

Professional Publisher has all the features and controls you require to produce output of the very highest quality.

Professional Publisher has ALL the features of Desktop Publisher Special Edition, plus the following:

- ★ **Linked windows...** Any number of windows can be 'invisibly' connected in a sequence determined by you so that text flows from one automatically into the next. Windows can be of any shape.
- ★ **Wraparound graphics...** Any graphic can be placed on a page and text can be made to automatically flow around the graphic. Pixel-proportional spacing and the integrity of columns will be maintained – the graphic can be of any shape and can wholly or partly overlap any number of windows. The user may define any polygon (up to 64 sides) to demarcate the desired border of the graphic, which need not coincide with its actual outline.
- ★ **Full mouse compatibility...** Smiling mouse owners can start smiling! The incredibly silky smooth feel of this system, when either used from keyboard or mouse, has to be experienced to be believed. It comes from our special scrolling and cursor-handling routines, handwritten in machine code. We suggest you use the system from the keyboard first, and then go in for a mouse if you feel the need to.
- ★ **Style and layout designer** allows you to create any number of layout templates, which contain details of columns, margins, gutters, breaks, guides etc. This permits the easy creation of multiple pages.
- ★ **No more fiddling** around with cursor keys for exact positioning – text can be snapped into guides.
- ★ **Full compatibility** (and now absolutely hassle free!) with ASCII files (say from Editor Special Edition), Quill .doc files and Quill .lis files – now with complete preservation of paragraphing, indentation, tabulation, superscripting, subscripting, italicising etc. Any size files can be handled – Pro Publisher has an on-screen skip/preview/chunk routine!
- ★ **Huge range of fonts** supplied (hundreds) – memory resident and disk resident – with sizes ranging from 8x8 to a gigantic 48x48! User-adjustable (pixel accuracy) descender position, character spacing, X and Y axis widths etc. In addition there are 26 graphic fonts!
- ★ **Page dimensions** specifiable either in pixels or millimetres – up to an enormous 960x1600 pixels and down to a tiny 48x48 pixels. Inch and mm rules provided.
- ★ **The whole of the ASCII set** is now supported – this is very useful if you want lots of special symbols or if you want to support non-English characters.
- ★ **Fingerprinting** is supported.
- ★ **A virtually infinite** selection of fill textures, with font patterns, graphics, or whatever you choose.
- ★ **There are 256 paint brushes**, with a unique programmable overlap (1/3/9 pixels) function.
- ★ **Automatic shading** and grey scale conversion of colour screens.
- ★ **Automatic interpolation** of graphics and fonts.
- ★ **Automatic bending/stretching/resizing** of graphics.
- ★ **All Boolean functions** supplied for brushes, fonts, graphics and freehand drawing – AND/OR/XOR
- ★ **Cut & paste** is supported both TO AND FROM the page itself, saved screens and compressed screens – this incredible support of all permutations gives unheard of flexibility!
- ★ **Full support** for kerning and pixel justification, including user-definable % line usage, user-definable maximum and minimum inter-character spacing and inter-word spacing (preventing the ugly spread of characters or words on a line when the first word on the next line is a very long one), preselectable/defaultable auto-hyphenation, auto-indent control, dropcaps, left/right/centre/off justification etc. etc.
- ★ **Walkdown menus** (selections either by a single keypress or by a moveable bar, you decide), context-sensitive help, very greatly enhanced user-friendliness.
- ★ **8/9/24 pin printers**, laser printer support, output any part of the page, individually vary X and Y axis magnification, user-selectable print density and number of passes.
- ★ **Professional Publisher** is supplied on disk for expanded QLs.

Digital Precision want to particularly acknowledge the skills of the ace programmer Andrew Astrand and his dedicated team.

**REMINDER: Taken out a QL WORLD subscription yet?
Yes, our non-UK friends, we mean you as well. Do it NOW!**

IDIS SPECIAL EDITION

All the features of the much-acclaimed IDIS Intelligent disassembler – but even more Intelligence!

This remarkable Special Edition, Only available to users of expanded QLs, has the amazing ability to recall earlier decisions while in a 'trial' disassembly mode. This greatly reduces the amount of help the system requires from you – usually to zero! Also, no longer will you need to answer the same (or similar) question more than once. Also added are facilities for dumping in hex/ASCII, default responses to startup interrogation, automatic resequencing of absolute addresses, non-destructive windowing etc.

UPGRADES

To upgrade from one version of a program to a later version of the same program, send us the cartridge/disk and £10. Except in the case of Special Edition Editor owners upgrading to the latest Special Edition Editor, do not return your manual to us.

To upgrade from a program to the Special Edition of the program (say from the standard Editor to Special Editor), send us the cartridge/disk, manual and the difference in current advertised price between the two programs, plus £10. For this purpose we will consider Professional Publisher to be an upgrade from the Desktop Publishers and Professional Astrologer to be an upgrade from Super Astrologer.

For example:

- ★ To upgrade DIGITAL C to SPECIAL EDITION C send us £40 (£49.95-£29.95+£10)
- ★ To upgrade an early SPRITE GENERATOR to the current version send us £10

PRODUCT AVAILABILITY ROSTER >>>>
Everything available NOW except:
Media Manager SE: 25th Jan 1989
THE SOLUTION: 25th Jan 1989

NEW

MEDIA MANAGER

Manages and controls disks and cartridges, transfers from/to alien formats, recovers corrupt/lost data.

PRICE SLASHED!

PROFESSIONAL ASTROLOGER

The best, most comprehensive astrology system in the world: suitable for beginners and experts alike. **Professional Astronomer** is a companion program of equal quality. **Super Astrologer** is a much simpler program and a lot of fun.

ACT SPECIAL EDITION

The Adventure Creation Tool enables the user - who need not know how to program - to create the most amazing adventures, with text, pictures and animation. A disk drive is needed.

TRANSFER UTILITY

Moves stuff from cartridge to disk, performs any translate.

BETTER BASIC

An expert system to help you improve your BASIC programming.

SUPERFORTH

Quite simply, one of the fastest FORTH-83 compilers ever written.

SPRITE GENERATOR

Moves things about, smoothly, quickly, flexibly, 256 planes.

ULTRAPRINT

Outputs screens (from Eye-Q etc.) to printers (Epson or Oki) beautifully, with lots of options.

VIDEO GIVEAWAY

Digital Precision will be giving away lots of VHS movie cassettes with randomly selected orders until stocks run out...

MICROBRIDGE

A generously specified contract bridge tutor and player. Of phenomenal educational and entertainment value!

THE GAME COLLECTION

Backgammon, Droidzone, Arcadia, Reversi/Othello, Blocklands... Super Fun!

EYE-Q

The classic QL graphic system

With all the features you would expect. Its superb, silky, precision feel is what makes this program so special.

SUPERCHARGE SPECIAL EDITION

The second- fastest BASIC compiler for the QL.. Non-budget power, budget price, improved speed - and no Lenslok!

TERMS & CONDITIONS

- * UK prices are all-inclusive: there is nothing to add
- * For orders from continental Europe, please add 5% p&p
- * For orders from outside Europe, please add 10% p&p
- * For details of hardware, other recommended products or free descriptive literature please write in.

PRICES

1) Turbo BASIC Compiler with Turbo Toolkit	99.95
2) Professional Publisher	89.95
3) Professional Astrologer with Astronomer	69.95
4) Desktop Publisher Special Edition	59.95
5) Professional Astrologer	59.95
6) Media Manager Special Edition	49.95
7) Digital C Special Edition	49.95
8) Adventure Creation Tool Special Edition	49.95
9) Success CP/M Emulator	49.95
10) 3D Precision CAD System	49.95
11) The Editor Special Edition	49.95
12) Superforth Compiler with Reversi	39.95
13) IDIS Special Edition	34.95
14) Microbridge	34.95
15) Eye-Q for Gigamouse	34.95
16) Digital C	29.95
17) Lightning QL Speed Enhancement System	29.95
18) Supercharge Special Edition	29.95
19) The Editor	29.95
20) Eye-Q Graphics System	29.95
21) Sprite Generator	29.95
22) Professional Astronomer	29.95
23) Desktop Publisher	29.95
24) Media Manager	29.95
25) IDIS Intelligent Disassembler	24.95
26) Super Astrologer	24.95
27) Cartridge-only Media Manager	24.95
28) Better Basic Expert System	24.95
29) Ultraprint Printer Control System	19.95
30) Super Backgammon	12.95
31) Droidzone Arcade Game	9.95
32) Blocklands Arcade Adventure	9.95
33) Super Reversi Othello Player	9.95
34) Super Arcadia	9.95
35) Transfer Utility	9.95

SPECIAL DEALS

When ordering just quote deal letter (A-P).

A 2+10+11+20	for	£189.95	(RRP £219.80)
B 2+11+20	for	£149.95	(RRP £169.85)
C 2+11	for	£124.95	(RRP £139.90)
D 2+20	for	£109.95	(RRP £119.90)
E 7+11	for	£89.95	(RRP £99.90)
F 1+7	for	£134.95	(RRP £149.90)
G 20+21	for	£49.95	(RRP £59.90)
H 1+12	for	£124.95	(RRP £139.90)
I 1+28	for	£109.95	(RRP £124.95)
J 10+20	for	£69.95	(RRP £79.90)
K 20+29	for	£44.95	(RRP £49.95)
L 11+13	for	£74.95	(RRP £84.95)
M 3+11	for	£99.95	(RRP £119.90)
N 1+11	for	£129.95	(RRP £149.90)
O 6+11	for	£84.95	(RRP £99.95)
P 30 to 34	for	£39.95	(RRP £52.75)

Show some initiative! You may construct your own special deals along similar lines to the above. If you're being reasonable so will we.

SUPER SPECIAL DEALS

- * £2 off if you buy two progs, £3 off three, etc.
- * Buy any five programs, get the cheapest one free.
- * Buy any six programs, get the cheapest one free and 50% off the next cheapest one.

To: Digital Precision, 222 The Avenue, London E4 9SE

or telephone 01-527 5493

Please send me:

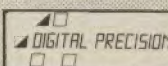
Name

Address

Postcode

I enclose ☐ cheque ☐ cash ☐ P.O. ☐ Access/Mastercard ☐ Visa/Barclaycard
for £..... card N°..... expires.....

Do you have ☐ 3.5" disks ☐ 5.25" disks ☐ Microdrives only
If you have disks, do you get ☐ 720 sectors ☐ 1440 sectors



PSION ORGANISER

Games Organiser	£35	Spelling Checker	£30
Comms Link	£60	Organiser XP2 32K	£139
32K D Rampack	£55	Numbase 1	£40
Centronics Interface	£40	Psion Printer	£195
Travel Organiser	£50	File Handling Book	£15
128K Datapak	£100	32K Datapak	£35

ZBase	£70.00	Z88 Computer	£230.00
Spellmaster	£60.00	Carry Case	£10.00
128K Rampack	£50.00	Z-Term	£52.50
QL - Z88 link	£23.00	Using Your Z88	£10.00
Centronics interface	£30.00	Z88 Computing	£10.00
512K RAM Pack	£200.00	Z-Tape	£52.50

Z 88

TK

COMPUTERWARE

the QL stockist

Tel: 0303-81-2801

ADD-ONS

Dual 3.5" d/d + 768K Trump	£400.00
Single D/D 3.5in. drive	£125.00
Dual D/D 3.5" drive	£209.00
Dual D/D 3.5" & i/face	£295.00
Dual 3.5" & 512K Trump	£350.00
Cumana disc interface	£ 86.25
768K Trump Card	£199.00
Hard Disk System	£250.00

SPARES

JS ROM sets	£27.50
Keyboard membrane	£6.25
ULA ZX 8302	£10.25
ZX 8301	£15.00
MAB 8049	£7.50
MP68008	£25.80
Z9007E	£10.25
Repairs	phone
M/drive assemblies- complete	£27.50
Voltage regulator (high output)	£4.75
Power supply UK	£23.50
QL Test kit	£13.50
M/drive assemblies (xchange)	£20.00

SUNDRIES

10 Microdrive cartridges	£17.50
Cartridge storage box	£5.50
QL Dustcover	£5.00
100 Microdrive labels	£3.75
Schon PS2 style Keyboard	£120.00
Battery clock kits	£19.50
10 DS/DD discs 3.5" (brand)	£29.00
Joystick + adaptor	£16.00
Psion 2.35 Sets	£23.00
Centronics Interface	£29.00
20 m/drive carts + storage box	£39.00
Scanner	£130.00

SOFTWARE

BUSINESS

Flashback (c-d)	£25.00
Cash Trader (PDQL)	£80.00
Cash Trader + Analyser	£105.00
Decision Maker	£35.00
Trading Account	£125.00
Home Finance (Buzz)	£22.00
Investment Monitor	£20.00
Project Planner	£29.00
Small Traders Pack	£25.00
Spellbound (c-d)	£30.00
Spellbound + Filebound	£35.00
Touch Typist	£12.00
Pacioli	£25.00
QTYP	£23.00

UTILITIES

Chocolate Emulator	£130.00
Archivist MP	£40.00
Archivist	£30.00
Cartridge Doctor	£13.00
Expert System	£50.00
CPM Emulator (c-d)	£30.00
Assembly Lang. Toolkit	£25.00
Page Designer 2	£35.00
Professional Publisher	£90.00
Master Spy	£30.00
Basic C-Port	£59.00
Front Page Extra 3 (c-d)	£45.00
ArchRTM + ArchDEV	£20.00
ICE Eprom	£27.00
Paste Art	£20.00
Key Define	£10.00
Locksmith	£11.50
Mailfile (256K)	£20.00
Archive Tutor	£20.00
QFLASH Ramdisk + toolkit	£19.00
QFLASH Ram Eprom	£25.00
QFLASH Ram utilities (c-d)	£10.00
Reconfigurable toolkit 2	£29.00
4 Matter	£11.50
Recover	£20.00
Speedscreen (C-D)	£20.00
Sidewinder Deluxe	£20.00

Media Manager (d)

XRef 2.00	£20.00
Multi Disk Over	£40.00
Super Toolkit 2 (Eprom)	£29.00
QIM1 + Mouse	£70.00
QLiberator (c-d)	£60.00
QLiberator (budget)	£30.00
Disc Over	£30.00
Success	£50.00
QRam (c-d)	£30.00
RPM	£15.00
Task Master (c-d)	£25.00
The Editor	£29.00
The Editor - special edition	£49.00
Turbo (c-d)	£99.00
Vanilla Emulator	£80.00
Turbo Quill Plus (c-d)	£13.00
Ultra Print	£20.00
SPY	£15.00
Lightning	£30.00
Quailsoft Terminal	£30.00

CAD

Concept 3D	£40.00
Eye Q	£29.00
3D Precision	£49.95
Technik	£25.00
TechniQL	£50.00
Viewpoint	£20.00
3-D Designer	£38.00

LANGUAGES

Assembler (Comp One)	£20.00
Forth (Computer One)	£30.00
Better Basic	£24.00
BCPL Development Kit	£51.00
C Compiler (GST)	£30.00
DevPac Development Kit	£30.00
Digital C	£30.00
Digital C Special Edition	£50.00
MonQL	£30.00
Pascal (Computer One)	£30.00
Pascal (Metacomco)	£75.00
Pro Fortran-77	£92.00

Pro Pascal

QMON	£92.00
Super Forth + Reversi	£20.00
IDIS	£39.00
IDIS - Special Edition	£25.00
	£35.00

GAMES

Chess	£17.00
Super Croupier	£13.00
Flight Simulator	£19.00
Matchpoint	£14.00
Bridge Player 2	£20.00
Professional Astrologer	£70.00
Super Astrologer	£25.00
Scrabble	£15.00
Snooker	£13.00
Squadron	£16.00
Super Backgammon 3	£13.00
War In The East:	
1 Barbarossa	£19.50
War in the East (set)	£39.95
Microbridge	£35.00
Cribbage	£15.00
Heart of Gern	£15.50
Area Radar Controller	£13.00
Talisman	£19.00
The Prawn	£15.00
Blocklands	£10.00
Archonoid	£15.00
Death Strike	£15.00
Fictionary	£11.50
Firebirds	£13.00
QLackman	£13.00
Karate	£15.00
Knight Flight	£15.00
Mortville Manor	£15.00
Quboids	£9.00
Vroom	£13.00
Dragonhold	£15.00
Stone Raider	£13.00
Lands of Havoc	£19.00
Wanderer	£15.00
D Day	£19.00

● Please telephone for details of other products not listed here ●

BOOKS

Using the Psion Organiser	£10	QDOS Companion	£9
Assembly Language	£9	Inside QDOS	£20
Programming		QL Service manual	£20

Other QL titles available - phone for details -

COMPUTERS

QL JS 2.35 s/w	£169.00
QL JM 2.3 s/w	£149.00

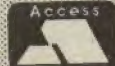
● ALL PRICES INCLUDE VAT AND UK MAINLAND DELIVERY - WE EXPORT WORLDWIDE ●

Phone for details of other QL products OR send SAE for our latest catalogue

Credit card phone orders accepted, or send cheques, postal orders, Eurocheques to:

**TK COMPUTERWARE, STONE STREET,
NORTH STANFORD, ASHFORD, KENT TN25 6DF**

TELEX
966676 PMFAB G



FAX
0303 812892

QL SCENE

Emulator war

Public confusion appears to be growing as several different companies offer MS-DOS emulators for the QL.

Digital Precision is concerned that buyers are confusing an emulator program advertised by Ant Software with the DP program *The Solution*, which is expected to be ready very shortly.

QL World has received a number of complaints that the Ant Software program is incomplete and unreliable as it stands. Contributor Mike Lloyd spoke to author Guy Turvey and established that he has not yet been able to make available essential parts of the program. This fact, and the collapse of a projected marketing agreement, makes the appearance of a V2 unlikely in the near future.

Schon PCP has now

announced a further MS-DOS emulator, scheduled to make its first appearance at the Alternative Micro Show on April 1. Titled *Transformer*, the program will be ROM-based, and plans are going ahead to implement a hardware-based CGA. "The program will be fully compatible with all versions of MS-DOS," said Schon's Chris Smith.

DP owner Freddy Vachha has stressed with great determination that the Ant emulator is not connected in any way with Digital Precision or *The Solution*. "I am unhappy that people have been contacting us with problems which have nothing to do with us," Vachha says. "Some people are under the impression that the other company is selling our software

but that is not the case. There is no connection."

Schon PCP has added two new products to its roster. A new discrete keyboard is based on the IBM PS/2 keyboard and has 102 keys, "most of which are QL-orientated," including a single key underscore.

A new program, *The Painter*, is a graphics package written in Europe and will retail for £29.95. Further details from Schon PCP, 15 Northcote Crescent, West Horsley, Surrey KT24 6LX.

Club Paris

QLCF, the French QL user club, is happy to be able to tell *QL World* readers that it now has its own premises in Paris, at the Paris telephone numbers (1) 43 48 64 40 and (1) 43 48 64 41. An employee will be available to answer questions during the latter part of the afternoon on Tuesdays, Wednesdays and Saturdays. A Minitel server is planned. The group's address is 38-40 Rue Stehenson, 75018, Paris, France.

Moving laser

Taylor Made Systems Ltd, which provides laser printing services for QL programs, has moved to 71 Wellington Close, Hepworth Way, Walton, Surrey KT12 1BB. Tel: 0932 241854.

Anti-sexist, please

London user Sandra Vogel has started an anti-sexism group, Organisation against Sexism in Software. Welcoming members of either sex, the group publishes a bi-monthly newsletter and charges an annual subscription of £3. For more

MS-QLink

Portuguese software writer Tiago Freitas Leal is providing the first in a series of file utilities for the QL, *MS-QLink*. The program transfers files both way disc-to-disc between the QL and PC compatibles, avoiding the need for an RS-232 link.

MS-QLink uses "an MS-DOS-like shell with an optional menu." Files can be specified by standard wildcards. Code translation on transfer is an option; the MS-DOS CR,LF separator can be exchanged with the Qdos NL separator in both directions. The translation table can be customised to the user's need.

MS-QLink runs as an executable multi-tasking job on QLs with standard disc interface. It handles 5.25in./360K and 3.5in./720K discs but "high-density discs need a controller not available on QL disc interfaces." Commands available include Dir, View, Rename, Erase and Format; Read and Write to MS-DOS; Xlat for translate status and options for program configuration. Directories in MS-DOS are not yet supported.

MS-QLink costs £12 plus VAT and is available on disc only from T F Teal, Qfile, R. Guarda Joias, 16 R/C E, 1300 Lisbon, Portugal. Tel: (overseas code) +01 637861.

A public domain version is available with MS-DOS Dir and View only. Send a 3.5in. or 5.25in. disc plus £1.

Take a number

Wayne Fletcher is looking for a publisher for his program *Turbo Numerology*. Fortune-telling and character analysis by numerology is "an alternative to astrology" according to Fletcher and the system used in his program is based on a book called *Hot Numbers* by Jean Simpson.

"The program is far easier to use than current astrology programs and can be used by anyone who can write his name in English and knows his date of birth," says Fletcher. Each reading produces two pages of text and users who wish to know more about numerology are referred to the book, which is not available with the program.

At present the program is

OPEN CHANNEL

Open Channel is where you have the opportunity to voice your opinions in *Sinclair QL World*. Whether you want to ask for help with a technical problem, provide somebody

with the answer, or just sound off about something which bothers you, write to: Open Channel, Sinclair QL World, Greencoat House, Francis Street, London SW1P 1DG.

Kapow

Lightning, as confirmed by John Silk's review in the September, 1988 *QL World*, is a good deal faster than *Speedscreen*. Lightning is 50 percent faster at the things *Speedscreen* does 30 percent faster on its own benchmark, 187 percent faster on the benchmark listing published in the July, 1988 *QL World*, 100-150 percent at the rest. *Speedscreen* was superseded by the faster, hassle-free lightning. Even Mike Lloyd, the original *QL World* reviewer of *Speedscreen*, wrote that he had been 'knocked out by the improvement' Lightning gave.

Creative Codeworks sales director claims that an inappropriate version was chosen; in fact, the biggest and least uncomprehensive one was used. Anyway, it matters little which of the eight routines is used; Lightning is far zippier than any of them. He implies that using ROM *Speedscreen* could turn the tables; that is incorrect — Lightning is faster and, contrary to his assertion, Lightning is ROMable and is cheaper than ROM *Speedscreen*. He tries to deny that different versions of *Speedscreen* are required for Thors and QLS; wrong again. Most humorous is the claim that CST 'chose' *Speedscreen* over Lightning.

CST made the 'choice' a month before we started writing Lightning.

All *Speedscreen* accelerates is two varieties of MODE 4 text, solid colours only — no stipples. It has little effect unless the window is 'word-aligned', something scarcely any program allows you to control. Lightning has no such restrictions and you do not need different versions for different situations; one Lightning does everything.

In addition, Lightning accelerates graphics — four- and eight-colour — accelerates internal maths functions, provides null device handling, screen suppression, 78 fonts and so on. Compatibility? Seven serious bugs in *Speedscreen* are listed on page 8 of May, 1988 *QL World*, Lightning is bug-free.

Freddy Vaccha
Technical director,
Digital Precision Ltd

covering letter, so that the cartridge can be slotted in and out of the case without separating it from the paperwork. Putting loose cartridges in envelopes, as many folk do, is asking for migrating Microdrives.

Exchange

I would like to exchange QRAM and/or CPMulator for a copy of the Medic Systems *M-Paint* and/or any back issues of *QL* magazines from 1984-1985 which may have dealt with the launch of the *QL*. Please write or telephone me on 0554 777867 after 5pm.

J.G. Williams,
33 Penllwynrhodn Road,
Llwynhendy,
Llanelli,
Dyfed.

Editor's notebook

Simon Goodwin is hopping with enthusiasm over the latest DIY Toolkit opus, *Taskforce*, by Phil Spink. Taskmaster forces programs which are not natural multi-taskers, like Quill, to co-operate with other programs as if born to it, and all without tying up a large amount of memory. "Why did you not put it on the market yourself?" we asked. "Because it is too small and simple," said Goodwin, "and cheap. You publish it."

Freddie Vachha of Digital Precision is annoyed because members of the purchasing public have confused his MS-DOS emulator The Solution — not available at time of writing, although it should be out in force by the time you read this — with an MS-DOS emulator published by Ant Software. Meanwhile, there is no further news of a possible upgrade on the latter program.

Now, Schon PCP is advertising an entirely new PC/MS-DOS emulator, *Transformer*, for projected release in April. The first reviews of the Digital Precision and Ant programs will appear in *QL World* next month. Probably they will not be the last. Anyone for GEM?

Escape

I mailed a letter and Microdrive cartridge to you on June 12. A few days later the Microdrive cartridge was returned to my by the Post Office stating that "This article has been found loose in the post." Luckily I had labelled the cartridge cover with my name and address.

You may like to quote this as a warning and suggestion to readers; this time I am using the envelope method.

E. Bamber
Milngavie
Glasgow

Editor's comment: Putting the owner's name and address on a label on all Microdrive cartridges sent to this or any other publisher is a useful safeguard against loss but the single most effective safety device is to fasten the mdv case firmly to its

Overheat

Having experienced overheating problems I decided to replace the voltage regulator as recommended by *QL World*. Taking the simplest route I set out to obtain a 78S05 as a replacement for the standard 7805. Looking through *QL World* advertisements, prices range between £4-£5. Visiting a local electronics shop. I found it could supply the same for £1.48. A more accessible source is the main supplier to hobbyists, Maplin Electronics. It will supply a 78S05 — order part number UJ54J — for 95 pence. Even adding 50 pence for post and packing and 50 pence surcharge for orders of less than £5, this adds to only £1.95, half the price of the cheapest *QL* supplier. Maplin Electronics Supplies is at PO Box 3, Rayleigh, Essex SS6 8LR.

Graeme Potter,
Taunton,
Somerset.

520ST-FM SUPER PACK



1Mb DISK DRIVE £450 OF SOFTWARE

ARCADE GAMES

Arkanoïd II	Imagine	£19.95
Beyond The Ice Palace	Elite	£19.95
Black Lamp	Firebird	£19.95
Buggy Boy	Elite	£19.95
Chopper X	Mastertronic	£9.99
Ikari Warriors	Elite	£14.95
Marble Madness	Electronic Arts	£24.95
Quadrallen	Logotron	£19.95
Ranarama	Hewson Consultants	£19.95
Return To Genesis	Firebird	£19.95
Roadwar	Melbourne House	£19.95
Starquake	Mandarin	£19.95
Test Drive	Electronic Arts	£24.95
Thrust	Firebird	£9.95
Thundercats	Elite	£19.95
Wizball	Ocean	£19.95
Xenon	Melbourne House	£19.95
Zynaps	Hewson Consultants	£19.99

SPORTS SIMULATIONS

Eddie Edwards Super Ski	Elite	£19.95
Seconds Out	Tynesoft	£19.95
Summer Olympiad '88	Tynesoft	£19.95

PRODUCTIVITY SOFTWARE

Organiser	Triangle Publishing	£49.95
-----------	---------------------	--------

JOYSTICK

Atari CX40 Joystick	Atari Corp	£4.99
---------------------	------------	-------

FREE ATARI BUNDLE VALUE: £458.97

£399

INCLUDING VAT

With SM124 mono monitor: £498 ^{INC VAT}

With SC1224 colour monitor: £698 ^{INC VAT}

1040ST-FM PROFESSIONAL PACK

NOW WITH TV MODULATOR

For the serious home user and the small business, we are pleased to announce a new package based around the 1040ST-FM. The 1040ST-FM has 1Mbyte RAM and a 1Mbyte built-in disk drive. In addition, the 1040ST-FM now comes with a TV modulator built-in. (The previously available 1040ST-F was designed for use with a monitor only and did not come with a modulator.) This modulator allows the 1040ST-F to be plugged directly into any domestic TV set, and comes complete with a lead to allow you to do so. The new 'Professional Pack' from Silica includes the new 1040ST-FM with modulator plus four high quality software packages including a spreadsheet, database, word processor and programming language. This 'Professional Pack' software will enable you to get straight down to business with your new computer. In addition to this software (worth £384.84), if you buy the Professional Pack from Silica Shop, you will also receive the Silica ST Starter Kit (worth over £200), FREE OF CHARGE. Return the coupon for further information.



ATARI 1040ST-FM	(Computer)	£499.99
VIP PROFESSIONAL	(Spreadsheet)	£149.95
MICROSOFT WRITE	(Word Processor)	£149.95
SUPERBASE PERSONAL	(Database)	£59.95
BASIC DISK & MANUAL	(Language)	£24.98

NORMAL RRP: £884.82

LESS DISCOUNT: -£385.82

PROFESSIONAL PACK PRICE: £499.00

£499

INCLUDING VAT

With SM124 mono monitor: £598 ^{INC VAT}

With SC1224 colour monitor: £798 ^{INC VAT}

2Mb & 4Mb MEGA ST

The MEGA ST computers are styled as a lightweight keyboard with a separate CPU, connected by a coiled telephone style cable. There are two versions of the MEGA ST, one with 2Mbytes of RAM and the other with 4Mbytes. Each version has a 1Mbyte double sided disk drive built-in to the CPU unit. The MEGA ST's do not come with modulator built-in and must therefore be used with a monitor. With every MEGA ST purchased, we will add the 'Professional Pack' software (worth £384.83) detailed above, plus the Silica ST Starter Kit (worth over £200) both FREE OF CHARGE. Return the coupon for further details.

2Mb MEGA ST

£899 ^{INC VAT}

+ mono monitor = £998

+ colour monitor = £1198

4Mb MEGA ST

£1199 ^{INC VAT}

+ mono monitor = £1298

+ colour monitor = £1498



DTP PageStream £149 ^{+VAT}

Desktop Publishing (DTP) is one of the fastest growing applications for personal computers. We are pleased to announce a powerful low cost package for the Atari ST called PageStream. PageStream costs only £149 (+VAT-£171.35) and, because it works with an Atari 1040ST and a Silica SP-180AI printer, you can be up and running with a complete system for less than £1000. Some of the features of PageStream are listed to the right. If you would like further information on this program, complete and return the coupon below, ticking the 'DTP' box in the corner.

- * TEXT-FLOW AROUND GRAPHICS
- * ROTATION OF TEXT & GRAPHICS
- * SLANT OR TWIST ANY OBJECT
- * POSTSCRIPT COMPATIBLE
- * FONT FUNCTION
- * AUTO-MANUAL KERNING & HYPHENATION
- * GROUPING OF OBJECTS



ST COMPUTERS

The range of Atari ST computers offers something for everyone. From the games enthusiast who wants the challenge of the very best in arcade action, to the businessman who wants to make financial forecasts or faultless presentations. The ST offers high quality graphics, sound and speed for the gamer, whilst providing a fast, user friendly and affordable solution to business. The ST is now firmly established in the home environment and boasts a wealth of users in education, local government, television, and a variety of different businesses. Software for the range stretches to cover applications as diverse as ENTERTAINMENT, ACCOUNTS, ART, COMMUNICATIONS, COMPUTER AIDED DESIGN, DATABASES, DESKTOP PUBLISHING, EDUCATION, MUSIC, PROGRAMMING, SPREADSHEETS, WORD PROCESSING and more. For a full list of the software available, as well as details of the ST range, complete and return the coupon below.

All prices correct at the time of going to press. £&O.C.

520ST-FM EXPLORER PACK WITH BUILT-IN 1Mb DISK DRIVE



The value for money offered by the Atari ST range is reflected in the Explorer Pack featuring the 520ST-FM computer with 512K RAM. The 520ST-FM computer now comes with a built-in 1 Mb double sided disk drive as well as a free mouse controller and a built-in TV modulator. The new 520ST-FM Explorer Pack includes the 520ST-FM computer, the arcade game Ranarama, a tutorial program and some useful desktop accessories. In addition, if you buy the Explorer Pack from Silica, we will give you the Silica ST Starter Kit worth over £200, FREE OF CHARGE. Return the coupon for details of our Starter Kit and of the full ST range.

£260

ONLY
£2.51
PER WEEK
RETURN COUPON FOR DETAILS
+VAT=
£299

+ SM124 mono monitor: £398 ^{INC VAT}

+ SC1224 colour monitor: £598 ^{INC VAT}

WHY SILICA SHOP?

Before you decide when to buy your new Atari ST computer, we suggest you consider very carefully WHERE you buy it. There are MANY companies who can offer you a computer, a few peripherals and the top ten selling titles. There are FEWER companies who can offer a wide range of products for your computer and expert advice and help when you need it. There is ONLY ONE company who can provide the largest range of Atari ST related products in the UK, a full time Atari ST specialist technical helpline and in-depth after sales support, including free newsletters and brochures delivered to your door for as long as you require after you purchase your computer. That one company is Silica Shop. We have been established in the home computer field for ten years with an annual turnover in excess of £3 million and can now claim to meet our customers requirements with an accuracy and understanding which is second to none. But don't just take our word for it. Complete and return the coupon below for our latest literature and begin to experience the Silica Shop specialist Atari service.

SILICA STARTER KIT: Worth over £200. FREE with every Atari ST computer bought from Silica.
PROFESSIONAL PACK: Free business software with 1040ST-FM and MEGA ST's bought from Silica.
DEDICATED SERVICING: 7 full-time Atari trained staff with years of experience on Atari servicing.
THE FULL STOCK RANGE: All of your Atari requirements from one place.
AFTER SALES SUPPORT: The staff at Silica are dedicated to help you get the best from your ST.
FREE CATALOGUES: Mailed direct to your home as soon as we print them, featuring offers as well as all of the new releases.
FREE OVERNIGHT DELIVERY: On all hardware orders shipped within the UK mainland.
PRICE MATCH PROMISE: We will match competitors on a 'same product same price' basis.
FREE TECHNICAL HELPLINE: Full time team of Atari technical experts always at your service.

FREE SILICA STARTER KIT WORTH OVER £200

WITH EVERY ST - RETURN COUPON FOR DETAILS
ALL PRICES QUOTED INCLUDE FREE UK DELIVERY

DO YOU OWN AN ATARI ST?

If you already own an Atari ST computer and would like to be registered on our mailing list as an ST user, let us know. We will be pleased to send you copies of our price lists and newsletters FREE OF CHARGE as they become available. Complete the coupon and return it to our Sidcup branch and begin experiencing a specialist ST service that is second to none.

SILICA SHOP:

SIDCUP (& Mail Order) 01-309 1111

1-4 The Mews, Hatherley Road, Sidcup, Kent, DA14 4DX

OPEN: MON-SAT 9am - 5.30pm LATE NIGHT: FRIDAY 9am - 7pm

LONDON 01-580 4000

52 Tottenham Court Road, London, W1P 0BA

OPEN: MON-SAT 9.30am - 6.00pm LATE NIGHT: NONE

LONDON 01-829 1234 ext 3914

Selfridges (1st floor), Oxford Street, London, W1A 1AB

OPEN: MON-SAT 9am - 6.00pm LATE NIGHT: THURSDAY 9am - 8pm

To: Silica Shop Ltd, Dept SQLW 4/89, 1-4 The Mews, Hatherley Road, Sidcup, Kent, DA14 4DX.

PLEASE SEND FREE LITERATURE ON THE ATARI ST

Mr/Mrs/Ms: Initials: Surname:

Address:

Postcode:

Do you already own a computer
If so, which one do you own?

DTP ☐

ABC MARK III

Now in its Mark III release, the latest adaptation for putting an IBM keyboard on the QL from the German firm of ABC Elektronik gives QL users yet another option from the unfortunate original choice of keyboard arrangements made by Sinclair Research.

Its first attempt to supply an alternative keyboard was demonstrated in 1986 at the October edition of the ZX Microfair. The demonstration at that time consisted of an IBM keyboard and an open-topped QL with the interface electronics completely replacing the QL 8049 chip, next to the left Microdrive.

If my recollection is correct, the Mark I interface included one of the Z-80 series of CPUs. So far as I know, the unit never worked and its functionality was limited to an installation display. I suspect that subsequent development of a working interface was concerned with integrating an interface with the complexity and peculiarities of 8049 programming.

The ABC Mark II — my designation, by the way — made its appearance in early spring, 1987; to all outward appearances the keyboard was the same. That version, included in an exclusive *QL World* review in March, 1987 along with the other three new QL keyboards of the time was, because of interface supply problems, non-functional.

No Z80

Within a month or so, a working version of the Mark II system was provided for evaluation. The re-designed interface did not include the Z-80 CPU and merely displaced the 8049 — you removed the 8049, plugged the interface card into the socket thus vacated and re-installed the 8049 on top of the interface PCB.

Once up and running the Mark II interface worked well and was free of keybounce. After some use, two design peculiarities came to light — `POKE_W` (163980,n) and `POKE_W` (163982,n), where n defaults to 30 and 2 respectively had been disabled by the interface.

The first of the `POKEs` is used to set the delay before a held-down key repeats itself and the second the rate at which a repeat takes place. If you set both to zero from SuperBasic the only way you will be able to type anything sensible into the QL is to re-set it.

Presumably this was the ABC way of preventing keybounce. The most unusual and undocumented aspect of the Mark II was that, if you pressed the "SYS REQ" — "SYStem REQuest" — key, the key used by the Schon PC keyboard as the

At last — Ron Massey gets his hands on one new keyboard interface

key assigned to switching between tasks — `<CTRL><C>` — the keyboard became locked out and the only way to regain control of the QL was a complete re-set.

The Mark III interface — so far as I know the keyboard has remained unchanged throughout successive versions of the interface — works very well. One of the oddities of its design, which never seems to bother QL users, is that the interface card consists of a bare 4in. x 4in. PCB which plugs into the QL ROM port and is mounted vertically, if somewhat precariously, behind the QL. Installation of the Mark III requires that you perform three operations:

Remove the top of the QL and extract both ROM chips — for as long as you are using the ABC keyboard adaptation they are not used again; solder a wire to either pin 30b — the upper row, towards the rear of the QL — of the expansion port or, if you are really adventurous, to pin 2 on the 8302 chip, the second pin from the back of the QL, on the left side — this chip has two resistors positioned on top of it — and run the other end of the wire from the ROM port hole in the QL lower case.

Plug in

The third stage is to re-install the upper part of the QL case, plug the ABC interface into the ROM port and connect the loose wire to the terminal pin on the PCB. The wire supplies the keyboard interrupt, a signal which is otherwise absent from the ROM port, and the keyboard will not function without it.

Most astute readers will immediately realise that, without its ROM chips, the QL is little better than an expensive and not very heavy doorstep. The Mark III, in addition to the usual collection of chips required for connecting the QL innards to the outside world, includes a 512K EPROM, an empty 28-pin IC socket and a pair of three-wire terminals.

The EPROM supplied with the Mark III includes the QL operating system but with some of the bugs fixed and, perhaps, other undocumented features. If you type "PRINT Ver\$" the QL new response is "GIGA".

I should imagine that the ABC-supplied operating system started life as a JS

version of the code but now lacks at least one of the JS peculiarities; if you type "PRINT '&ver\$" on a JS machine you will always get a spectacular crash. The Mark III has corrected that.

The spare IC socket is used for plug-in add-ons which may otherwise occupy the ROM port, such as toolkits. Whether this would also work with *ICE* and, most particularly, *MICE*, I was unable to ascertain.

The pair of three-wire terminals is used for switching the user-installed EPROM between a range of addresses:

C000 to FFFF — 49152 to 65535.
8000 to BFFF — 32768 to 49151.
4000 to 7FFF — 16384 to 32767.
0000 to 3FFF — 0 to 16383.

You can either hardwire-bridge two pairs of terminals or, by installing your own rotary switch, have the option of switching between two to four EPROM areas; be sure to re-set your QL after switching. To take advantage of this option you will also need to have up to four of your own EPROMs — toolkits and such — blown on to a single 27512 EPROM.

Improved

In addition to considerably-improved reliability of better key switching, a much better tactile sense and the usual functions available from the standard QL keyboard, ABC has enhanced the keyboard operation of the QL.

In addition to having 10 function keys — the upper five available from the standard QL keyboard as `<SHIFT> F1` to `F5` — and having LED indicators on the CAPS and NUMBER LOCK keys, there are several keys dedicated to functions accessed previously with the use of two or more QL keys on the standard keyboard.

ABC has incorporated two new SuperBasic commands into its keyboard interface `KEY_ROW` number, either 1 or 0, respectively activates the QL `<CTRL>` (joystick) ports or the keyboard. This command, which is added to program boots, has been included because, if you are using joysticks, the keyboard is disabled.

`HOT_KEY` char\$ defines which key in combination with `<ALT>` is assigned to the PRTSC key. If you are running Qram, adding a line to your boot like `HOT_KEY "/"` effectively will tell the QL you have pressed `<ALT></>`, the normal Qram call-up combination.

The `KEYROW` function has been enhanced with the addition of three new rows and a speed increase of 50 times is claimed by ABC.

Except for two reservations, I feel that the ABC keyboard system is a superb instrument. The first reservation is that the interface is a bare PCB and, as such, is vulnerable to having metallic objects accidentally connecting parts of its circuitry which would be much better left alone.

The second consideration is more serious. If you nudge the interface while the QL is powered up you run the risk of causing serious and permanent damage to the electronic components of the QL, the interface or both.

ABC suggests that "you may fix the interface with a screw to the QL case." I suggest that this should be considered a requirement for a finished installation.

Since KEYROW is used by many programs, especially graphics programs, one point which should be a major concern to all potential purchasers of the ABC keyboard is its compatibility with QL programs. The keyboard will not work with programs which disable the interrupts or clear interrupt lists. According to ABC, this technique is confined to a few games, such as *The Pawn* and *Knight Flight*.

Installation of the interface is simple but requires considerable care. I have misgiv-

New Key
BREAK
Scroll lock
HOME
END
PAGE UP
PAGE DOWN
DEL
INsert
CTRL -
CTR +
SYS REQ
PRTSC
CTRL PRTSC
ALT SHIFT SYSREQ
ALT SHIFT PRTSC

Old key/function
<CTRL> <SPACE> — Stops a SuperBasic program.
<CTRL> <F5> — Toggles pause.
Cursor to start of line, usable with editors only.
Cursor to end of line, usable with editors only.
Scroll up one page, usable with editors only.
Scroll down one page, usable with editors only.
<CTRL> <RIGHT> — delete character under cursor.
<ALT> <ENTER> used with Toolkit II.
Slows program
Speeds program
<CTRL> <C> switch between tasks.
User-definable.
Toggles between Mode 4 and Mode 8.
Level 7 interrupt — the QL <CTRL><ALT><7>.
Keyboard-based QL re-set.

ings about the wisdom of supplying hardware which requires users to dismantle their machinery to be able to install it.

There is one cardinal rule which applies to the majority of all computer hardware. Never install or remove peripherals while the equipment is powered up.

If you have doubts about your ability to install the interrupt line — removing the ROM chips, too, I recommend that you let someone more experienced handle.

In spite of the time taken to develop a viable keyboard, ABC has done a grand job with its implementation.

If you are using the ABC interface with other IBM or NCR keyboards variants, you may find that some of the more esoteric codes generated by different keyboards may be at some variance with what is required.

ROW COL	1	2	4	8	16	32	64	128
10	PAGE DOWN	INS	DEL					
9	NUM LOCK	SCROLL LOCK	HOME UP	PAGE	—	5	+	END
8	SYS REQ	LEFT	PRT SCR	F6	F7	F8	F9	F10
7	SHIFT	CTRL	ALT	X	V		N	.
6	B	2	6	Q	E	0	T	U
5	9	W	I	R	R	—	Y	O
4	L	3	H	A	A	P	D	J
3		CAPS LOCK	K	F	F	=	G	:
2		Z		B	B	E	M	'
1	ENTER	CURS LEFT	UP	ESC	CURS RIGHT	/	SPACE	CURS DOWN
0	F4	F1	5	F3	F3	F5	4	7

QUANTA

QL Users and Tinkerers Association Independent QL/Thor Users Group

Worldwide Membership is by subscription only and offers the following benefits:

Monthly Newsletter (up to 40 pages)

Massive Software Library - Mostly FREE

FREE Helpline- Workshops - Bulletin Board

Regional Sub-Groups - one near you?

Advice on Hardware & Software problems

Discounts from most major suppliers

Subscription just £14 for UK members

Overseas Subscription £17

Barclaycard - Visa - Access - Mastercard

Further details from the Hon. Secretary:

PHIL BORMAN,
15 GROSVENOR CRESCENT,
SOUTH HUMBERSIDE,
DN32 0QJ
Tel: (0472) 49850



Elektronik

Andreas Budde, Hugelstrae 10-12
4800 Bielefeld 1
Telefon 0521/890381
Telex 932 974 budde d
Telefax 0521/160400

The Giga Soft IBM-Keyboard Interface

-the IBM keyboard-Interface is connected to the QL ROM-Port. But the user does not lose the possibility to use additional Roms, because of a ROM-socket on the Keyboard interface.

-with the IBM Keyboard Interface it is possible to use any IBM or compatible PC/XT Keyboard.

-with the IBM Keyboard Interface the user will have twice the input speed of the original keyboard!

-the IBM keyboard Interface is fully "keyrow" compatible!

Extras:

<- delete character left CTRL SHIFT <- delete whole line (in editors only)
CTRL <- delete word left (in editors only) SHIFT <- cursor to start of line (in editors only)

There are five new function-keys:

F6	SHIFT F1	F10	SHIFT F5
F7	SHIFT F2	CTRL SPACE	BREAK
F8	SHIFT F3	SCROLL LOCK	CTRL F5
F9	SHIFT F4		

NUM LOCK toggles the state of the NUMLOCK LED.

This controls the function of the numerical pad. Is NUMLOCK on; then a keypress on it generates the numbers and characters shown at the keys, otherwise

ARROW KEYS

HOME
END
PAGE
PAGE
DEL
INS
CTRL -
CTRL +
SYSREQ
CTRL PRTSC
ALT SHIFT SYSREQ
PRTSC
ALT SHIFT PRTSC

CURSOR CONTROL

Cursor to start of line (in editors only)
Cursor to end of line (in editors only)
UP Scroll up one page (in editors only)
DOWN Scroll down one page (in editors only)
Delete character under cursor
ALT ENTER (with SuperToolkit II)
program slow down
program speed up
Job-change (function of CTRL C)
toggles MODE 4 and MODE 8
Level 7 interrupt (CTRL ALT 7 at the QL.)
s.u.
RESET

Over 400 units sold

Order form

	Price	with Keyboard
The Giga Soft IBM-Keyboard Interface	£ 45 / DM 139,-	£ 85 / DM 259,-

Name and address

Cheque, credit transfer to Postgirokonto Dortmund Nr. 90283-469
C.o.D. only Europe (not UK, Greece, Northern Ireland) Accepted, £= export prices

MIRACLE SYSTEMS

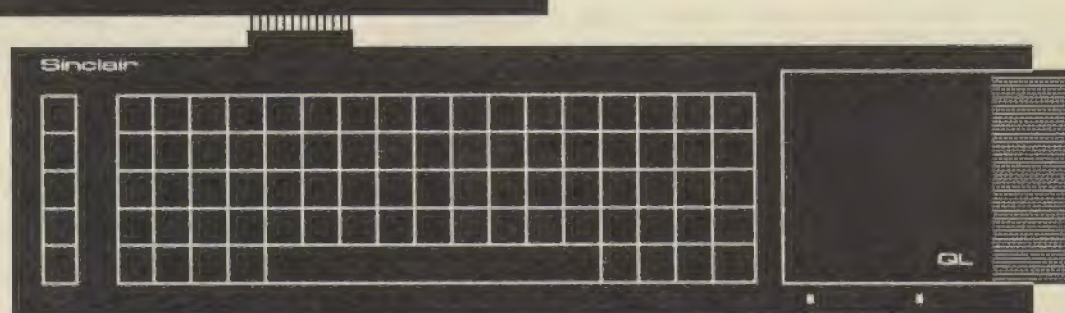


SEE US AT
The Alternative Micro Show
In the New Horticultural Hall, London 1st April
and at
The Northern Sinclair Show
Stokes Hall, Church Street, Leyland, Lancs. 8th April

QL HARD DISK

30 Mbyte Hard Disk

£399 inc



(£355_{exp})

Mass storage with fast access

Over 30 megabytes of programs and data can be stored on the Miracle Systems QL Hard Disk - the equivalent of more than 40 floppy disks. Loading from and saving to the QL Hard Disk is also much quicker. So you can now have the convenience of holding all your files on the QL Hard Disk, all accessible at any time, rather than having to repeatedly insert and remove floppy disks. The floppy disks themselves (or Microdrives) need only be used for loading new software and backing up the QL Hard Disk.

The QL Hard Disk is a complete unit comprising a hard disk mechanism, an interface and a mains power supply all housed in a black metal box. It connects to the QL via the ROM port and has a through connector for a ROM cartridge. To keep the handling of files simple an enhanced directory system is implemented in the QL Hard Disk firmware.

MIRACLE SYSTEMS, 25 Broughton Way, Osbaldwick, York, YO1 3BG, U.K.
Tel: (0904) 423986

MIRACLE SYSTEMS



SEE US AT
The Alternative Micro Show
In the New Horticultural Hall, London 1st April
and at
The Northern Sinclair Show
Stokes Hall, Church Street, Leyland, Lancs. 8th April

14 day money back guarantee on all products
12 month warranty on all products
UK prices include VAT and P&P
(Export prices in brackets include P&P)

QL TRUMP CARD RAM & DISC I/F

- ☆ Increases memory to 384K/640K/896K **256K £135 (£120)**
- ☆ Standard 3.5" disc i/f
- ☆ Screen dump **512K £195 (£172)**
- ☆ RAM discs
- ☆ Printer buffer **768K £249 (£219)**
- ☆ Memory cut
- ☆ Toolkit II

QL TRUMP CARD PACKAGE



- ☆ 2 x 720K
- ☆ NEC mechanisms **256K £285 (£255)**
- ☆ Very quiet operation **512K £345 (£307)**
- ☆ Cables included
- ☆ Mains powered **768K £399 (£354)**

QL CENTRONICS £29 (£28)

- ☆ Plugs into SER1 or SER2
- ☆ Standard Centronics plug
- ☆ Default Baud rate 9600
- ☆ 3 metre cable
- ☆ All cabling included

QL MODEM £49 (£45)

- ☆ Printout software
- ☆ 1200/75 e.g Prestel, T Gold
- ☆ Autodial
- ☆ 3 metre cable
- ☆ Plugs into SER2
- ☆ Viewdata software
- ☆ 80 column software
- ☆ Not BT approved!

Tel: (0904) 423986

To place an order by phone please have your credit card ready. For overseas customers we charge the prices shown in brackets.

To order by post, please fill in the form opposite or write to us quoting your credit card number and expiry date, or enclosing a cheque payable to MIRACLE SYSTEMS.

To: MIRACLE SYSTEMS, 25 Broughton Way, Osbaldwick, York, YO1 3BG, U.K. Tel: (0904) 423986

Please send me _____

I enclose a cheque to the value of £ _____

or debit credit card ☐

expires ☐ ☐ / ☐ ☐

Signature _____ Name _____

Address _____

SOFTWARE FILE

Information:

Product: ABC Elektronik Mega-Ram board

Price and ordering: see current advertising.

The standard QL has a healthy 128K of RAM but most QL owners have now added at least an extra 256K of RAM expansion to take full advantage of its multi-tasking abilities. Many who dipped their toes into the water with modest expansions are now looking for upgrades of half a megabyte and more. Even owners of 640K QLs would welcome the provision of even more cavernous quantities of memory.

For those who remain unconvinced about buying a RAM pack, the mouth-

ly by a factor of four or more.

★ Front-end management systems such as QRAM and Taskmaster can be used to ease the chores of managing a multi-tasking, multi-device computer system.

★ Part of the RAM can be formatted to act as one or more ultra-fast floppy discs.

★ More than one program can run at a time because of multi-tasking.

Leader

The current leader in this thriving market is Miracle Systems, which manufactures the tried and tested Expanderam and Trump Card. The choice appears to be widening with the appearance of the Mega Ram board from ABC Elektronik of Germany.

The board tested by *Sinclair QL World* arrived via a

Mike Lloyd gets his hands on the new Mega-Ram board from ABC Elektronik and has a spot of trouble with the transplant.

ling check which is very fast. A more thorough check is included in the toolkit.

Unlike Expanderam and Trump Card, which can be installed in the QL expansion port by any careful person, the Mega Ram is designed to fit completely inside a standard QL casing. This choice of installation method seems to be at the heart of the problems experienced by everyone who has tried to use it.

Risky

Miracle Systems, to which the board was initially sent for evaluation, believes that the installation process is too complicated and too risky for the average home micro owner. The QL must be opened and the top separated gently from the base. Chips, including the CPU, must be removed carefully from the motherboard and installed on the Mega-Ram board, which then slots into

no further use. One possibility opened by this arrangement is that it may one day become possible to replace the M68008 with the much faster M68000 chip. The engineers at Miracle Systems found that the slightly raised mount for the M68008 made it difficult to obtain firm connections between the motherboard and board, which slots into the Mega-Ram and, as a result, could not get the expansion system to work. My efforts at fitting the board resulted in the complete failure of the QL.

A crystal which annoyingly pokes up more than half an inch from the motherboard surface had broken at the base.

I took the sick computer to Screen Scene of Cheltenham and its engineer made a third attempt to install the Mega-Ram.

He achieved success only by the expedient of removing the offending crystal and attaching it to the circuit board via a length of wire.

With the QL keyboard de-

"Apart perhaps from extra disc drives, extra RAM provides the most startling and cost-effective improvement to the QL."

watering range of advantages from having additional memory space should convince them that, apart perhaps from disc drives, extra RAM provides the most startling and cost-effective improvement to the QL.

★ Programs stored in external RAM run faster than those which use the slow QL internal memory.

★ More data space is available for memory-hungry programs such as Quill and Abacus, allowing larger documents, spreadsheets and databases to be constructed.

★ Toolkits can be installed to add extra commands, change the screen fonts and to accelerate text handling and graphics facilities typical-

circuitous route and without price details. It has a neat 'L'-shaped design with a new, square Motorola 68008 chip, an anonymous ROM containing the usual toolkit extensions, a bank of Siemens RAM chips and connections for chips which must be removed from the purchaser's QL.

The review model had 1MB of RAM but the accompanying documentation suggests that a gargantuan 3MB can be fitted — surely more than enough to please the most ardent multi-tasker. The prospect of sitting through an interminable memory check with every re-set has been circumvented by the incorporation of a clever RAM samp-

"It needs to be marketed by a company willing and able to modify QLs sent by customers who do not wish to undertake this task themselves."

the positions left vacant in the QL insides.

At the end of the installation process you are left with the original rectangular M68008, for which there is

tached and with a vital part dangling precariously, the Mega-Ram began to perform exactly as the maker claimed it would. The Mega-Ram board deserves success but it cannot

SOFTWARE FILE

be endorsed by *Sinclair QL World* in its present form. It needs to be slightly re-engineered to fit more easily into the QL.

It needs to be marketed by a company willing and able to modify QLs sent by those customers who do not wish to undertake this delicate and demanding task themselves.

Slotted

Alternatively, and for my money preferably, it would be far better to re-design the board so that it can be slotted into the QL expansion slot in the same way as Expanderam and Trump Card. We shall report developments from ABC in future issues.

Information

Program: Psion Organiser II *Result*

Supplier: Nick Frank,
PO Box 4075,
Wellington,
New Zealand.

Price: £34.74 (NZ\$90)
plus £5 (NZ\$13) post
and packing.

The Psion Organiser has a long association with the QL because of the similarities between its native language, OPL, and the QL Archive database language, which was also written by Psion. Like the Cambridge Computer Z-88, the Organiser has a number of utilities which support its main database, one of which is a

programmable calculator. Not content with its facilities, New Zealander Nick Frank is marketing a ROM pack calculator called *Result*.

Result handles basic arithmetic in a friendly and sensible fashion, using the two lines of the Organiser display to show both the number being entered and the running total. Numbers can be inverted, negated, subtracted from, divided into, "raised as a power of", rounded up, down or to the nearest integer, and assigned to one of 10 memories, greatly exceeding the functionality of standard hand-held calculators.

Up to 12 significant digits are supported under the user's control. If a mistake is noticed the backtrack facility restores the previous running total. Values held in the calculator

are retained even if the power is turned off or other software is in use.

Parentheses

The usual suite of scientific and trigonometrical functions is available, mostly from a single keypress, and up to six levels of parentheses can be used. Users would have to write their own statistical procedures. As befits an integrated system like the Organiser, Result can be accessed from within OPL procedures and it can call OPL procedures — perhaps its greatest strength. Whether it is worth buying Result depends on what use you make of your Organiser. Quantity surveyors, agrotech farmers and al fresco mathematicians should look closely.

QL SUPERTOOLKIT II by Tony Tebby THE ULTIMATE QL ENHANCEMENT

Over 118 Commands:— Full Screen Editor, Key Define Print Using, Last Line Recall, Altkey, Job Control, File Handling, Default Directories, Extended Network.

16k Eprom Cartridge Version £24.15d
Configurable Version on Microdrive £23.00d

MIRACLE SYSTEMS PRODUCTS

QL Trump Card 768k (Toolkit II etc) £293.25d
QL Trump Card 512k (Toolkit II etc) £224.25d
QL Trump Card 256k (Toolkit II etc) £155.25d
QL Expanderam 512k Thru Card £155.25d
QL Expanderam 256k Thru Card £86.25d
QL Modem £48.30d
QL Centronics Printer Interface £28.75d
QL Modaptor £37.95d
QL Mirdipack £77.05d

QL HARDWARE

Single 3.5" Disc Drive & (Own PSU) £97.75d
Dual 3.5" Disc Drive & (Own PSU) £188.60d
Multi Drive 5.25"-3.5" new fully screened upgraded version £213.90d
Q POWER REG. The only real solution to your QL overheating (switched mode power supply run cold) £23.00d
QL Keyboard Membrane £11.50d
QL Keyboard Contact Pad £11.50d
QL Base Computer JM version £139.15d
QL Base Computer JS version £149.50d
QEP III Advanced Eprom Programmer £121.90d
Care Eprom Cartridges each £5.75c
Eprom 27128 250n/s 16k £5.75c
ULA Chip ZX8301 £15.64d

MAGNETIC MEDIA

Microdrives (each) £1.98c
3.5" (each) d/s disc £1.61c
3.5" (10 of) d/s discs £13.80c

THE Q CONTROL BOARD

As specified in the Colin Opple Connexions Series — Please call for details £89.95d
Analogue/detail chip £26.91c
Cross Assembler 8046 or 6502 £8.40c

QL GAMES

AMBITION By Way Ahead £19.95c
Business Orientated Strategy "Super Monopoly" QL YAHTZEE £9.20c

TONY TEBBY SOFTWARE (QJUMP)

GRAM "new" COMPLETE QL MULTITASKING FRONT END. A TRULY AMAZING DEVELOPMENT FROM QJUMP POP IN MENUS, FAST RAM DISC, UTILITIES, HOTKEYS, SCREEN/WINDOW DUMPS, PRINT SPOOLER, ETC. £29.90d
QIMI QL Internal Mouse Interface. Keeps your Ram port free QIMI + RTBBU £39.79c
QIMI + ORAM £63.25c
QIMI + MOUSE £79.35c
QIMI + MOUSE + ORAM £88.90c
QFLP (MicroP disc interface upgrade) £14.95c
QMON II Microdrive £15.95c
QMED (Medic disc interface upgrade) £14.95c
QPTR Pointer Interface m/drive £34.50c
QPTR Pointer Interface + 3.5" disc £29.90c
QTYPE Type/Spell Checker £29.90c
QPAC Desk Top (clock, calendar, typewriter, etc) £21.85d

ZITASOFT SOFTWARE by Steve Jones

LOCKSMITH copies M/DRIVE — M/DRIVE £11.50c
4MATTER + LOCKSMITH copies M/DRIVE — DISC £23.00c
SHRIVEL memory shrink prog user definable ie 128k or 192k or 256k etc £6.90c
TOOLCHEST utilities to allow the creation of customised mdv doctor pron £11.50c

SIDEWINDER DELUXE amazing PRINT utilise Screen dumps to any size from postage stamp to 20ft banners. Prints sideways, inverts and scales + Mode 4 and Mode 8. Dumps with grey scale shading. Includes across the webbing label making facility. £17.25c

MONITORS (Price including lead)

Philips BM7502 Green Hi-Res £89.93a
Philips CM8833 Colour Med-Res £271.41a
Philips AV7300 TV/tuner for above £69.00b
Philips TV/Monitor 1010 £220.80a
Remote TV/Monitor 1210 £230.00a

READYMADE LEADS

RGB QL to Photo £5.75c
RGB 8-6 pin DIN £7.13c
RGB 8-7 pin DIN (Hitachi) £7.13c
RGB 8-7 pin DIN (Ferguson) £7.13c
RGB 8 pin to SCART (Euro) £11.50c
6 way PCC 25way 'D' (Printer-Ser 1) £9.89c

HOW TO ORDER:

By Post. Enclose your Cheque/PO made payable to CARE Electronics.
Or use ACCESS/VISA. Allow 7 days for delivery

ALL PRICES INCLUDE VAT

CARE ELECTRONICS
OPEN
9am-5pm Mon-Thu
9am-4pm Fri-Sat

800 ST ALBANS ROAD,
GARSTON, WATFORD,
HERTS. WD2-6NL.
Tel: 0923-672102



NEW PRODUCTS
New Upgraded
Fully Screened
Q Power Reg

Please add carriage a-£11.50,
b-£5.75 c-£1.15 d-£2.30

Text '87

— a good read

text⁸⁷ has been with us for some time, gaining popularity steadily, but the new upgrade and utilities founttext⁸⁸ and founted⁸⁹ move it into a different league.

These three programs belong together and are discussed as a team, but text⁸⁷ can be used without either of the other two. Having said that, it must also be said that the full value of the word processor is not enjoyed until founttext⁸⁸ is utilised with it to give genuine WYSIWYG performance. This expression has been so abused that many people will doubt if printer output from a word processor can look like what is displayed on the screen but these programs achieve what has seemed like "pie in the sky" until now.

text⁸⁷ has been around for more than a year and has been reviewed previously. It was felt that the recently-released version 2.00 marked a suitable stage for a further review. Existing users will welcome the additions/changes, which include definition of up to 10 typestyles for selection by Shift+F4 and Shift+F3 1-9; changing Feature or Option of current typestyle independently; on-screen display of current Ruler and Type using F2; on-screen justification — as well as in printout; four columns can be printed abreast; early versions allowed only three typical dot matrix printers but four on wider-carriage daisywheel printers.

The ability to set up 10 typestyles from within the program makes it unnecessary, for simple operations, to use a utility such as ALTKEY to do the job; it is not possible to save the definitions but this feature will be added later. To explain the second point by example, if you are using Printype 10 — i.e., Elite 10 Standard — and wish to embolden and underline the same typeface, it is necessary only to change the Option number. The command for this is F3 T O 3.

Likewise, when using the same typestyle, converting it to Italic Elite 10 Standard requires only the command F3 T F 8. In other words, enhancements to basic typefaces have been separated partially from those faces and can be added to other faces by using the same commands. This certainly reduces the complication and number of the ALTKEY macros which have to be set up.

Other planned additions are extra double-width and italic fonts, underlining

Information:

Products: text⁸⁷, founttext⁸⁸, founted⁸⁹

Prices: £45, £25, £15 (£80 for all 3)

Supplier: Software 87, 33 Savernake Road, London NW3 2JU.

for graphics printing, a new font to resemble business letter type, an internal memory indicating available memory reserved for the program. Possibly of most interest for those who use multiple fonts is a combined text and graphics printer driver which will allow the built-in printer fonts to be used for straight text and the founttext⁸⁸ driver for graphics founts.

The additions may mean little to someone contemplating buying the program, so here are some of the main features:

Similar command structure to Quill, with selections by F3 plus 1 or more letters; menu choices with hints displayed

"The expression WYSIWYG has been so abused that many people doubt that output can look like a screen display."

only when F3 pressed; permanent status line similar to that in Quill along bottom of screen; settings such as margins, tabs, justification, line spacing displayed on ruler; multiple fonts displayable on-screen (7 fonts supplied); screen line-length automatically adjusted to character pitch, multi-tasking (e.g. with TaskMaster, The Editor, and with itself); printout essentially the same as screen display (only limited by the differences between display and printer fonts); automatic reformatting during typing (Mode Reformat command needed after some changes to format); line-spacing adjustable in small increments (allows for different-sized fonts); support for 9- and 24-pin dot-matrix,

daisy-wheel and laser printers; faster operation overall than Quill.

The functions you would expect in major word processing programs are there — hard and soft space hyphen; export and import — in ASCII, text⁸⁷ and Quill formats; on-screen word count; Go To Top/Bottom/Page; alter size of program window; change default program and data devices; set right/left/decimal/centre tabs; set left/right margins and indent first or subsequent lines of paragraph; block copy/move/delete, set up to four columns; set headers and footers; page numbering; hard page break; page preview before printing; print, justified or not, by page — every or alternate — or line; print to SER/PAR printer/mdv/flp, zap/quit; re-format or freeze hold existing format until changes are completed; search/replace old or new string; change/insert Ruler; set line spacing to 1/6in., 1-72in., 1/48in., 1/180in. or 1/300in. for different printer types; documents loaded with cursor at same position as when saved. The cursor movement and delete commands are comprehensive and similar to those used in Quill and The Editor.

Functions you might not expect are setting the margin by length — 1mm., 1/6in. or 1/10in. — specifying the memory allocation; reducing displayed character width to get more large characters on to the screen; auto-loading of fonts and document parameters Ruler, columns, memory reservation; changing printer drivers from within the program; block change of Ruler/Type; re-mapping the keyboard, e.g., to another language set.

Type styles

The import function has features additional to those one would expect. Quill-document parameters; Ruler, columns, d_ doc files retain their type styles — i.e., bold, superscript, subscript, underlined. Corrupted Quill and Archive files can be imported using the ASCII option, as can export files from Quill, Abacus and Archive.

The program is not suitable for basic 128K QLs. To make use of the full

capability to have fonts and the fountex⁸⁸ printer driver loaded, expansion memory of at least 128K is needed. Expansion memory of 64K is sufficient for text⁸⁷ on its own. The program file is about 74K long; text printer drivers typically take 6K and the graphics drivers about 45K. text⁸⁷ files can be checked with *Spellbound* and compatibility is claimed with *QRam*, *QTyp* and *TaskMaster*. No difficulty is anticipated using the program with the hard disc drive announced by Miracle.

Generator

founted⁸⁹ is a font generator program with which you can either modify the supplied fonts or create your own. There is no sensible limit other than available memory to the number of fonts which can be displayed; if you want 255 fonts you can have them but it is for you to create them. fountex⁸⁸ extends the capabilities of text⁸⁷ into the area of graphics by providing graphics printer drivers.

There are currently 36 fonts supplied with this program, four being common with ones supplied with text⁸⁷; including the default font, this makes a total of 40 available. The graphics drivers are not specific to printer brands but are set up as one of two types — Epson-compatible or non-compatible — with either single-pass or double-pass printing to give a trade-off between speed and quality of print.

The specified driver can be loaded into text⁸⁷ when required, in the same way the standard text drivers are, and it carries with it any selected fonts. As a maximum of 32 fonts can be loaded at one time if sufficient memory is available, there should be little problem making fancy circulars and brochures. The feature which has to be seen to be believed is the similarity of screen display and printout. In a sense, you could consider the driver as doing a screen dump of the text area.

The supplied screen characters are from 8 to 72 pixels high — i.e., up to 1in. high including the spacing between lines. Characters from any of the supplied 40 fonts; any others you create can be mixed however you want on each line. The

printed characters are relatively free of the jagged outlines which are produced by some programs.

Using text⁸⁷ in its basic form is likely to be sufficient for most users. If you normally use printer features such as condensed, enlarged condensed and enlarged Pica, choose three of the seven provided fonts to represent them on the screen; if the widths of the characters do not give the same number of characters per line as the corresponding printer fonts, it is not difficult to use founted⁸⁹ to alter the character widths to match your printer fonts more closely; increasing/decreasing the space either side of each character may suffice.

The program adjusts line length to match the width of the printer characters, rather than that of the screen characters, so that it is not essential to have screen and printer fonts matching. Although the character shapes on the screen may then not be the same as those on the printer,

"I would suggest having fountex⁸⁸ for full WYSIWYG capability. founted⁸⁹ is perhaps a luxury for most users."

you know that the positioning will be the same and that is the biggest problem solved for most users.

There is no safe way of making a recommendation on buying any program but a verdict is presumably what many users want in a review. My feeling is that text⁸⁷ V. 2.00 is a good and comprehensive program, well worth having; I would further suggest having fountex⁸⁸ to get the full WYSIWYG capability. founted⁸⁹ is perhaps a luxury for most users but will be very desirable for those who have the time to spend creating their own fonts. Bear those points in mind when making a decision on buying:

Apart from the fact that it was free, there is now little point in sticking with Quill unless you do not find it lacking in any

respect. The Editor long ago provided a good alternative to Quill and is still first choice for the more manipulative type of work — program development, for example. text⁸⁷ gives comparable speed to The Editor, while having a similar screen presentation to Quill, some people dislike the non-WYSIWYG screen of The Editor. I find uses for both programs but never touch Quill any more other than for test purposes.

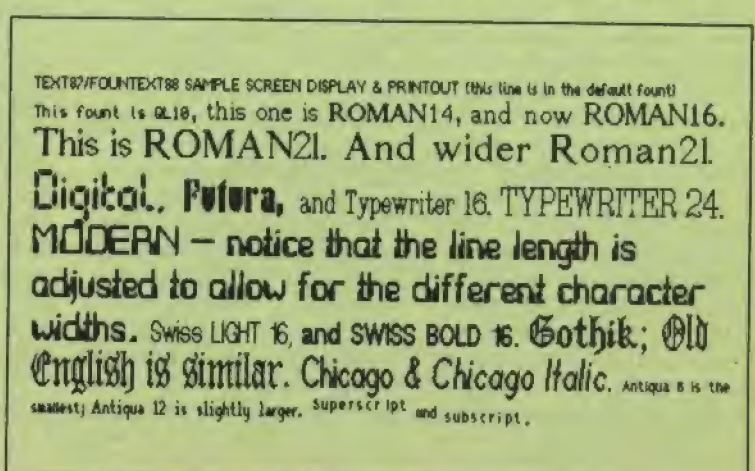
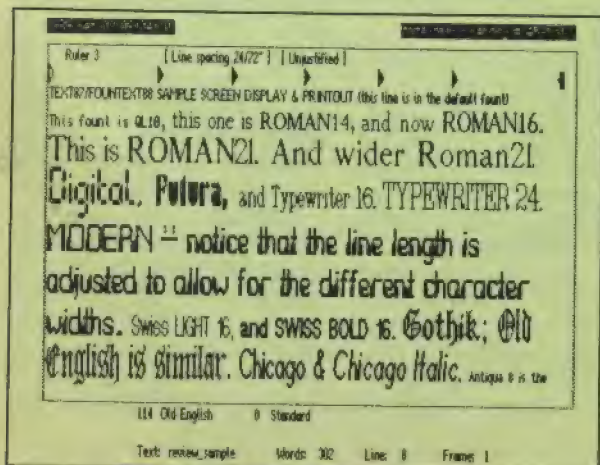
If different fonts mixed is your requirement and including pictures with text is not important, text⁸⁷ is very likely preferable to a desk-top publishing type of program. It may be easier to adjust to, for those coming direct from a word processor, has a good range of fonts especially with fountex⁸⁸ and can be relied on to show just how the printout will look.

It has some capability to introduce pictures into the text, as fountex⁸⁸ allows picture files from some graphics programs — or screens saved using the SBYTES command — to be split into blocks and defined as a series of characters, which can then be "typed into" the text.

Where the requirement is definitely in the realm of desk-top publishing you need to go to *Professional Publisher* from Digital Precision.

A planned enhancement to text⁸⁷ is the facility to have several documents open simultaneously, with just the one copy of program code — similar to what the Psion XChange and TaskMaster permit with the Psion quartet. This will avoid the considerable overhead of having to load the program code for each document; as the printer driver is already built-in there will be room for two large documents, plus a spelling checker and a database on a Trump Card system.

For those who already have an earlier version, or who contemplated buying one but were deterred by features which did not work or were too complicated to use, version 2.00 can be recommended without hesitation. It is still not what could be called an easy program to get used to — but it now works well and is straightforward to use once you have spent a few hours setting up and saving your regular document and driver configurations.



Product: The Prawn
Price: £15
Supplier: TK Computerware, Stone Street, North Stanford, Ashford, Kent TN25 6DF. (0303) 812801.

Whether board or computer-oriented, adventures of all types have always had an almost cult-like following. It is with some surprise that so few really good adventure games have appeared on the QL. In addition to the Talent *West* and *ZKul* from the early QL days, a small number of other particularly good adventures have appeared on the QL through the years.

The Gilsoft adventure programming system, *The Quill*, has had phenomenal success on the Spectrum. When it was released for the QL in late 1986 it looked as if QL users were to be treated to games which were as good as those available for any of the other machines.

The much-anticipated flood remained a trickle. Potential adventure authors lamented the Gilsoft failure also to provide a QL version of the graphics system long available on the Spectrum.

Entice

Even the release of the Digital Precision *ACT*, the most comprehensive games programming system available for any machine with the possible exception of the Atari *STOS*, and its complex accompanying adventure, *Imagine*, has so far failed to entice many potential authors to put their imaginations to work.

Even so, several very good QL adventures, with Talent dominating the market, have appeared. Talent Computer Systems has been the principal supporter of a wide range of adventures for the QL and its latest release, *The Prawn*, loosely makes gentle fun of another well-known adventure bearing a similar name.

The Prawn has been written using *The Quill* and is an inter-related, three-part adventure starring the most unlikely of heroes, a kind of super shrimp. Supplied on two cartridges, *The Prawn* is always started from cartridge one. The loading screen gives you the option of starting game play from any

of its three parts. You will need to collect objects from previous parts of the game before you can begin to participate actively in the adventure. Not needing a password to enter parts two and three is a useful feature, since it allows you to become familiar with the general layout of the locations.

When each part of the game is loaded, you have the option of typing *INTRO*, giving a brief scenario of the part; *BEGIN*, to start a new game; or *LOAD*, to position you at your last saved location.

In part one, *The King's Keep*, you start with the Prawn awakening in a strange land to the harsh cries of a crow. As the hero, you last remember scuttling along a sandy thoroughfare when you were suddenly scooped up by a passing trawler.

Serious

The next part of the adventure takes place in the *Ancient City of Laros*, huddled on the western edge of King Kretin's domain. The cowardly king has allowed Korona the Magician to usurp the Palace, placing the city's inhabitants at the mercy of the Badlands.

While on your quest, you will visit the commercial district of Laros which includes jewellers, markets, clothing stores, pawn shops, pubs and offices of the city's officials. Beware of the maze in the catacombs.

Part three, *The Badlands*, is fraught with political unrest, collapse of law and order and unseen dangers; the only Dimpy's fast food bar has been closed. All these things have

brought the inhabitants close to revolt.

The Prawn is laced liberally with the kind of genuinely humorous puns which are guaranteed to sustain interest in continuing to the end of the game. There are a number of random elements placed at strategic points throughout the story. Some of the game play must be done during the day; some parts must occur at night.

Success in completing the game relies solely on collecting and re-locating objects found throughout. Player's dialogue with The Prawn can be in the usual n, s, e and w for north, south and so on. Equally acceptable are parts of words, so long as their abbreviated form is unambiguous and exceptional to its vocabulary.

A range of special commands has been included in the game to help players:

STATUS, indicates whether it is night or day; *RAMSAVE*, saves current position in memory; *RAMLOAD*, restores saved position, if you are killed; *SAY* is used with dialogue between characters; *WEAR*, to wear an object; *REMOVE*, to remove an object; *I*, the inventory of all objects held.

In common with most adventures, it is a good idea to spend some time browsing through the locations, mapping your routes as you navigate to successive locations. Like the majority of complex games there is little chance of completing the game without having a map of some kind.

Save your position frequently. *King's Keep* and the *Ancient City of Laros* include mazes

and traps for the unwary and unprepared.

If you are to save a position, save it when you first arrive at a location.

Parts one through three are played consecutively. After completing part three for the first time you will be returned to unvisited locations in all the parts to complete other stages which require distribution of objects acquired during the first visit.

Examine everything The Prawn includes very few red herrings and almost every object has a purpose.

Browse

The Talent release of Martin Hopkin's first adventure, *Horrorday*, and its sequel, *Fun-fear*, have both suffered the unfortunate fate of never receiving as much attention as they deserved. Hopkin's authorship displays a rare brilliance for attention to logical detail and providing a subtle and sometimes not so subtle — humour which eliminates the artificial awesome purpose so often seen in this type of game.

With more than 200 locations, 70 objects, 500 messages and a vocabulary of 600 words, The Prawn must be among the biggest adventures devised for the QL.

Continuing with what has become a tradition of the gentle mickey-taking theme featured in both of Hopkin's earlier games, The Prawn is sure to delight adventure enthusiasts everywhere. Although it has its humorous moments, it is a serious game.

SOFTWARE FILE

I Ron Massey looks at an adventure game which draws inspiration from a pun.

PDQL

**will be at the Alternative Micro Show
NEW HORTICULTURAL HALLS, LONDON.**

APRIL 1st, 1989, 10am-5pm

Situated close to Victoria Rail and Coach Stations

In the Kingdom of ROM

King Compu studied the corruption in his discs. Corruption in high places was never pleasant; it had to be removed without delay.

"Fetch LAZARUS hither!" he bellowed and LAZARUS appeared like a shining knight to dispel the royal gloom.

"Recover my lost files," said the King and LAZARUS, a dedicated disc file recovery servant, did just that.

"While you're at it," said the King, "RECOVER my lost database files and select any reward at my disposal."

"My friend RECOVER is the Archive expert," explained LAZARUS. And RECOVER was duly fetched, performed and was rewarded with a special position in the King's library.

The Exchequer

The King was in his counting-house, counting out his money.

"What you need, Sire, is TRADING ACCOUNTS or CASH TRADER — with ANALYSER of course," said his Chancellor respectfully.

And so it came to pass that the King used TRADING ACCOUNTS to balance the Royal Exchequer and keep the VATman happy.

One Thursday he summoned his Chancellor but was informed on Thursdays the Chancellor locked himself away all day to carry out his PAYE calculations for the Royal Household.

"Is there no quicker way of dealing with this problem?" thundered the King. "I need you for advice, not to spend time on demeaning calculations that an electronic slave can accomplish in seconds.

"PDQ-Payroll takes the aches out of PAYROLL calculations," said the Chancellor.

"Then obtain the animal," exploded the King, "and put it to work."

Flippy and Floppy

Flippy and Floppy, the Royal children, were in a flap. They were due to entertain a foreign visitor, King lbm, the Prince of Darkness.

It was only that morning that they had been told that their guest spoke a different language. They desperately needed a translator. It was the Chancellor who again came to the rescue.

"To DiscOVER the message of lbm, you require the services of DiscOVER. His brother, MULTI, will be on hand in case you want to read messages from the BBC or converse with the strangers of Cpm."

Meanwhile Byte, the dog, growled in his sleep.

The Bridge of Psion

The TASK MASTER had so many things to do that day, but the most important was shepherding his charges from the Palace to the FILE DUMP. One of the prisoners of his DOMINATION was Alan "Red" Adair, the SpellBinding Poet.

"Shall I COMPARE thee to a Summer's Day?" he quoth.

Alan looked at two versions of his latest masterpiece "Ode to PDQL". The screen display paused as it found the first sector where a mismatch occurred. By using the magic sliding panel Alan was able to continue his search and identify the parts other seers could not reach.

The Princess

Princess Listeria was not at her best as she laid the spreadsheets on the tables. She called for the doc; but instead of Doc Ascii, a strange, garbled medic appeared.

"You need texTidying," commanded the Princess and, in a flashback or two, the curious figure became the handsome Doc Ascii quicker than the royals lips on a frog.

The Throne Room

The King was compiling the list for the Royal Birthday Honours.

Alternatively using a QUILL and his trusted EDITOR he resolved on a Dukedom for PDQL.

***All PDQL products are fit for a King.
PDQL — by royal appointment to the Kingdom of ROM***

PDQUALITY

Systems for Businessmen

CASH TRADER UPGRADE version 2.4	
New Users	£85
Existing Users	
(send CT boot with order)	£44
UPGRADE for CT Upgrades	£10
(Support Scheme members)	£5
SUPPORT SCHEME MEMBERSHIP	
fee per annum	£15
CT ANALYSER (extra memory required)	£25
MAIL MERGE de LUXE	£14
PDQ-PAYROLL	£70
SUPPORT SCHEME MEMBERSHIP	
fee per annum	£15
TRADING ACCOUNTS (extra memory required)	
New Users	£125
Special Discounts for Cash Trader Users	
SUPPORT SCHEME MEMBERSHIP	
fee per annum	£15

Programs for Programmers

ARCHIVE DATABASE ANALYSER	£7
ARCHIVE SCREEN FORMAT PRINTER	£7
PDQ-XREF	£15
SEDIT	£15
SuperBASIC MONITOR	£7

And for Leisure

DOMINATION	£9
-------------------------	----

Programs for Everybody

ArchDEV/RTM version 2.38	£20
ARCHIVE TUTORIAL	£21
COMPARE	£10
FLASHBACK	£25
graFix	£16
LAZARUS	£20
NAMES & ADDRESSES (extra memory required)	£18
(with RTM extension)	£36
PSION PRINTER INSTALLER and Configurator enhanced	
and TURBOcharged	£6
PDQ-COPY	£8
RECOVER	£20
SPECIAL EDITOR latest edition (extra memory required)	
.....	£49.95
SPELLBOUND and FILEBOUND (compiled version)	
(extra memory required)	£35
FILEBOUND (send disc/cartridge and s.a.e.)	£5
TASKMASTER (extra memory required)	£25
PSION SUITE upgrades	
versions 2.35 Quill, Abacus, Easel-Archive version 2.38	
£5 each, send disc/cartridge and s.a.e.	

Recent additions to the list

DiscOVER	£29.50
Multi-DiscOVER	£39.00
Dat-Appoint	£64.00
EYE-Q	£29.95
Page Designer 2	£35.00
LIGHTNING	£29.95
TURBO v.2	£99.00
TurboQuill+	£13.00
Basic C-Port	£59.00
XREF 200	£20.00
TexTidy	£10.00
HARDBACK and FINDER	£25.00
IMAGE PROCESSOR	£19.00
CLIP ART for PD2 each	£6.00

HARDWARE

TRUMP CARD	£280.00
NEC DISC DRIVES	£181.00
(Together £460.00 plus ten discs)	
512k Trump Card	£220.00
(with Disc Drives £375.00)	
256k Trump Card	£145.00
(with Disc Drives £300.00)	
STAR LC-10	
Mono	£255.00
Colour	£290.00
Star LC-24 10 (24-pin — 8 MLQ Fonts,	
plus Pica, Elite, Italic, Shadow and	
Outline print variations	£460.00
CAMBRIDGE COMPUTERS	
Z-88	£275.00
128k RAM	£46.50
512k RAM	£190.00
128k EPROM	£46.50
EPROM Eraser	£43.00
QL Link	£22.50
Parallel i/f	£27.90
Serial Printer cable	£12.00
Mains Adaptor	£9.00
Carry Case	£9.00
AMIGA 500	
Please 'phone for New Year prices on the new	
Amiga 500 — you won't be disappointed!	

COMING SOON

disCALL — a new fully featured disc editor including a novel disc identifier and IBM, CPM and BBC format facilities.

PDQC — a fully fledged C Compiler (full K & R standard) and fully compatible with BASIC C-PORT

MANY OTHER General Utility, Archive Utility and Application Systems. NEW Systems or adjustments to existing systems built to order. All PDQL superBASIC programs are C Compiled or TURBOcharged. All PDQL built programs are THOR compatible.

Prices include VAT and carriage in the UK

PDQL

Computer
Systems and
Software

UNIT 1, HEATON HOUSE
CAMDEN STREET
BIRMINGHAM B1 3BZ
021 200 2313

MAKE THE MOST OF YOUR QL AND THOR

for home and business use — Order from list or write for current catalogue. Prices include VAT and postage within the UK. Cheques with orders to, and full descriptive list available from PDQL. Please state details of toolkit, extended memory and or disc.

Your ticket to DiscOVER

QL to IBM RETURN — Any Day £29.50

DiscOVER is the essential program for transferring any file EITHER WAY between QL and IBM format. NO CABLES NEEDED. NO SIDE-by-SIDE MACHINES. Run DiscOVER, select to or from the QL, transfer all or cursor selected files. Features include optional symbol translate; delete file; automatic file-name change for IBM/QL compatibility. Available on 3.5 or 5.25 disc.

£29.50

PDQL have a larger version including CPM and BBC transfer facilities as well as IBM — Multi-DiscOVER **£39.00**

European orders may be placed with:

DANSOFT, Raadhustraede 481, 1466 Copenhagen K, Denmark. Tel 45(01) 930347 11.

NEW from PDQL

Another PDQL first — The quintessential indispensable, uninterruptable POWER LINE UNIT for your QL or THOR — it smooths and filters the electricity supply AND provides a battery back-up for switching from the mains supply in the event of mains failure — 'phone or write for details.

Until BASIC C-PORT

it was a case of "long time no C"

Now at £59.00 you can convert your SuperBASIC programs to C (and compile using Lattice C).

With TextTidy at £10

you can tidy your Quill docs for DiscOVERing as plain textfiles or for reading into the EDITOR; it will also tidy WORDSTAR files which you have already DiscOVERed.

HARDBACK and FINDER at £25

A unique double act for HARD DISC users. It saves to floppy by directory or sub-directory all, selected or only those files which you have amended since the previous save. FINDER allows you not only to locate files at any directory level but also files containing user selected strings. Test it at mains directory level to find any file anywhere on your hard disc which contains the word "PDQL" (or similar).

XREF 200 at £20.00

All the features of PDQ-Xref (glossary of user-defined words, line-numbers for each occurrence, key words used, warning reports). Plus a two part procedure trace to indicate the dynamic call hierarchy. In other words all calls are reported, by and from whom. In addition a step-ladder report indicates at what level of the program each call is made. PDQ-Xref is still available at £15 — To upgrade from PDQ Xref send master, sae and £5.

HARD DISCS FOR THE QL

PDQL is stocking the Miracle 30mg HARD DISC — £399

IBM EMULATOR FOR THE QL — THE SOLUTION

The DP IBM-MSDOS Emulator — With MSDOS V.4.01 £129.00 — and without £79.00

ACCOUNTS MADE EASY BY PDQL

CASH TRADER UPGRADE

The Accounts program built for the small business. It provides a complete and easy-to-enter Accounting Routine with instant up-to-date Balance sheet, Profit and Loss A/C, Audit Trail, VAT Report and VAT Return as well as a Trial Balance.

Accountants use it — nuff said!

For new users	£85
Quest users (send boot cartridge)	£44
Annual Support Scheme	£15
CT 2.4 Upgrade for Upgrade users send master disc/cartridges	£10
(Support Scheme Members)	£5

CT ANALYSER (needing extended memory)

Is the essential companion to Cash Trader (versions 2.1 and later)

£25

TRADING ACCOUNTS

The flexible Accounts package — Cash Trader Data files easily converted — built at the request of Businessmen with extra book-keeping needs. At least 256K memory required.

All the advantages of Cash Trader upgrade plus many new features — navigation by initial letter as well as scrolling; varying size Groups a feature; Analyser included with other features designed to speed up both book-keeping and reporting

£125

Special prices to existing Cash Trader users as follows:

Quest Cash Trader users	£84
Upgrade customers	£45
Support Scheme Members	£40
Upgrade customers with CT Analyser	£20
Support Scheme members with CT Analyser	£15



"PDQL WILL BE AT THE NORTHERN
MICRA FAIR — APRIL 8th, 1989."

VISA

Information

Product: QKick version

4.0

Price: £14.95

Product: Disktool

Price: £9.95

Supplier: Schon PCP,
Northcote Crescent, West
Horsley, Surrey KT24
6LX.

Tel: 04865 3836.

UTILITY FILE

Emerging from a period of relative quiet in a manner not unlike the mythical Phoenix, Ultrasoft has released two new products — one of which will be reviewed in the near future — and added a number of features to an established product.

Making its first appearance two years ago, QKick is now in its version 4.0 release and is fully *QRam*-compatible.

QKick, used in much the same way as *QRam*, is a kind of background front-end and, once activated, suspends temporarily all other currently-running programs. Although some of the QKick and *QRam* functions are similar, for the most part they complement each other.

Activated with the default <ALT> <SHIFT> hotkey, QKick offers five main options from its GEM-type menu. Each option has a main pulldown sub-menu and, from left to right, you can select Desk, Files, Notes, Tools and Exit. Options are selected with the left-right cursor keys and <SPACE>. The call-up key can be re-defined by selecting DESK, moving the menu bar to CUSTOM and pressing <SPACE>.

Hotkey

In addition to the hotkeys, options on this sub-menu allow you to define the spool device — ser1 or par — and the QKick database sort order. Other CUSTOM options include: Hotkey definer, defaulting to <ALT> <SHIFT>; other combinations include <ALT> <CTRL> or <CTRL> <SHIFT>, if the default hotkey is being used with a program such as *Keydefine*; screen off time, defaulting to a delay of 150 seconds; if no keyboard input is made for the set period of time, screen display is disabled. Pressing any key will reactivate the screen. Range is

in increments of 30 seconds from 30 seconds to 15 minutes; CQueue char which alters the QL default <CTRL> <C> job switcher.

If for any reason other key combinations are required, characters from chr\$(1) — <CTRL> & <A> — to chr\$(255) — <ALT> and any key except <CAPSLOCK> or cursor keys — can be used; Repeat Delay and Repeat Frequency defaulting to a value of 30 and 2 respectively; the former value determines the delay before a character will repeat itself and the latter value determines the repeat frequency rate.

The FILES sub-menu accesses a complete range of file management controls for either floppy or RAM disc; Directory; View — an option for copying a file to the screen; File Info provides a directory from which a particular file is selected. The selected file is shown with its statistics regarding type, length, dataspace and last update; Copy; Back-up named files to a named device; Change will convert every occurrence of one string with another and provide a report of the number of conversions at the completion of the option; Rename; Delete will delete selected files; Start a job; Format will format a selected floppy or RAM disc.

The NOTES menu; An 800-character, two-page Notepad; Diary Calendar, in conventional calendar format, preceding and successive months may be paged; Database; Altkey definer; Calculator; Hex and decimal converter.

The TOOLS sub-menu allows you directly to Edit Memory, a File or a Sector; the Job Control option produces a further menu giving access to Job information, Job pointers

and setting Job priorities. Other options from the TOOLS menu allow you directly to Load or Save Memory, to Save a screen or to spool a file.

Disktool

Until now, the ceiling for formatting double-sided QL discs has been limited to a maximum of 80 tracks of nine sectors each, totalling 1,440 sectors.

The Ultrasoft *Disktool* system requires version 1.14 or newer of the QJump Pointer Interface and version 1.08 or newer of the Window Manager, both of which are supplied; or the complete *QRam* system, version 1.14 or later.

Using <ALT> <D> as its hotkey, Disktool functions are displayed in the familiar *QRam* format. Icons and menu bars may be selected by moving the cursor over them and pressing <SPACE>. All functions are available with equivalent keypresses except for a FORMAT and COPY DO command.

The *Disktool* range of functions falls into one of five broad categories — Disc Protection/De-protection, drive selection, formatting parameters, copy select and format select.

Previously, protecting data from unauthorised personnel has usually meant encrypting it. While this form of protection is undoubtedly effective, its one shortcoming is that encrypted code repeats itself and, even with three eight-character code words, an experienced hacker can eventually work out the encryption sequence used.

The Ultrasoft protection routine works in a completely different manner. First selecting PASSWORD, you can enter a four-character code which can be any QL printable character from chr\$(33) to chr\$(191). Clicking on PRO-

TECT — or pressing P — you are offered a chance to accept or abort the routine. Once accepting your defined code-word, the disc is made unreadable. Asking for a directory of a protected disc will yield only: PROTECTED 0/0 sectors

Unprotecting a disc is done by entering the same password, which is also case-dependent, and clicking on UNPROTECT — or pressing U. You are offered an ACCEPT/ABORT option as with protect. Failure to use the exact decoding password will render disc data permanently inaccessible.

The left-central group of icons is used to specify source and destination drives for copying. You can specify either copying to the same drive, from drive one to drive two or drive two to drive one.

Seven options are available for formatting discs — single or double-sided formatting, format the media in drive one or drive two, format at 80 or 84 tracks and the volume name.

In addition to being able to click on individual icons, you can also press <1> or <2>, to select the drive, <T>, to toggle between 80 and 84 tracks, <S> or <D> to format a disc, single or double-sided. The COPY and FORMAT menu bars must be selected.

Provided you have the appropriate *QRam* utilities available, Disktool can be put on EPROM and a version of the code for blowing on to an EPROM is included on the supplied disc.

Short and to the point, Disktool is one of those utilities which, when you have used it for a time, you begin to wonder how you fared without it. I have used successive versions of QKick regularly since its first release and find it indispensable.

text⁸⁷ VERSION 2.00

Just over a year since the release of text⁸⁷, we are proud to present the new version 2.00 of our advanced wordprocessor. Version 2.00 offers all the features of the earlier versions of text⁸⁷ plus the following:

- * On-screen pixel-accurate justification.
- * Optional display of the ruler for the cursor line.
- * Optional display of the name of the current typeface in addition to the WYSIWYG display of founts.
- * Up to 10 typefaces (selected by the user from those supported by the printer drivers) are available for quick insertion in the text. The Program remembers these selections for the next editing session.
- * 10 screen display founts are now supplied with the Program including 3 sans-serif, 4 Roman, superscript, subscript and italic founts.
- * New 80 page manual.

text⁸⁷ is extremely fast. Running on the Atari ST with the QL emulator, it outperforms most multifont wordprocessors running on the ST, AMIGA or the Macintosh Plus and matches the fastest ones. Even on the much slower QL it is more than a match for many of those wordprocessors. On QLs with 512k memory expansion text⁸⁷ can handle large documents of over 400k characters.

text⁸⁷ can print multiple-line headers and footers, print in up to 4 columns, and change line spacing in different parts of the text. Many dedicated and generic printer drivers are supplied for different families of printers. Once selected, the printer driver is automatically loaded and becomes an integral part of the Program. With any Diablo or Qume compatible daisywheel printer (including Epson, Brother, Juki, Panasonic, etc) text⁸⁷ can handle multiple daisywheels, proportional spacing, bold, underlined, superscript and subscript text even on models, which do not provide commands for these features. On Epson and compatible dot-matrix printers different character widths and styles can be mixed on each line with microjustification. Proportional spacing is also available with some dot-matrix printers. The number of different print styles supported by each driver varies between 48 and over 200. The whole range of QL accented characters is supported on all Epson and IBM Proprinter compatible dot-matrix printers.

founttext⁸⁸ is the graphic printer driver for text⁸⁷. Used with Epson compatible dot-matrix printers, it provides desk-top publishing facilities with thirty high-quality founts (not ordinary QL founts) in different styles and sizes up to 72 pixels high. With founttext⁸⁸ you can

use graphic founts without the limitations in text editing and document size imposed by page makeup programs. founttext⁸⁸ can load up to 32 founts and allows you to use them in any combination in the text. On QLs with 512k expansion, maximum text size can be up to 300k depending on the founts loaded. founttext⁸⁸ can be configured for two print densities and a choice of single pass or overlapping double pass print. A special 24-pin version is supplied at no extra cost.

fountedit⁸⁹ is the new graphics editor for founttext⁸⁸. It allows you to create new founts of up to 84x96 pixels per character or capture screen images saved from QL drawing programs for insertion in your documents. Using founttext⁸⁸ these captured images appear on the screen and on paper to pixel accuracy.

2488 is a set of state-of-the-art text-mode printer drivers for Epson and NEC 24-pin printers. When used with 2488, text⁸⁷ is the only QL program that can take advantage of the advanced features of 24-pin printers such as multiple character founts, proportional spacing, double width, double height, condensed, etc. For example, the driver for the NEC P2200 supports 12 typefaces each in 5 sizes and in a range of up to 12 further combinations of highlights, resulting in over 500 different print styles!

text ⁸⁷	£45	founttext ⁸⁷	£25
fountedit ⁸⁹	£15	2488	£15
Complete edition: text ⁸⁷ + founttext ⁸⁸ + fountedit ⁸⁹			
Other software:		Qram	£29
Taskmaster	£25	Qtyp	£29
Spellbound	£29	Qpac II	£19

Prices are inclusive of airmail worldwide. Payable by cheque, Postal Order, Eurocheque or credit card. Please specify cartridge or disk system.

text⁸⁷ is very compact and works perfectly with a minimum 64k of memory expansion. founttext⁸⁸ requires at least 128k expansion. text⁸⁷ is compatible with all QL memory expansions and disk interfaces and most multitasking software.

No other QL product offers the facilities and the range and quality of output that our system provides. If you want to know more about text⁸⁷ send for our new leaflet.

Software⁸⁷
33 Savernake Road,
London NW3 2JU

text⁸⁷

TECHNIQL

A two-dimensional CAD package suitable for all general, scientific and engineering applications

- Create accurate, finely detailed plans, diagrams or designs.
- * Zoom in and out.
 - * Library of drawing tools
 - * Fast, multi-width output
 - * 2 screen modes

£49.95

DISK VERSION
NOW AVAILABLE

CARTRIDGE DOCTOR

Essential for all QL owners.

- * Rescue files from damaged cartridges
- * Recover newly deleted files
- * Recover files with damaged blocks
- * And much more

£17.95

ASSEMBLER WORKBENCH

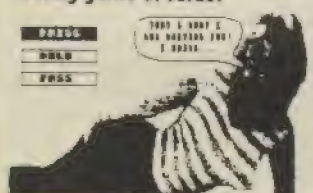
A complete set of tools for the machine code programmer.

Combines assembler, monitor and screen editor. Dual screen to assist debugging of graphics programs, can operate on RAM or disc files. Compact and easy to use.

£24.95

STRIP POKER

Challenge the luscious Denise to a riveting game of cards.



£14.95

COSMOS

Identify 500+ stars and planets with this impressive astronomy program. COSMOS displays accurate star maps for any date and time anywhere in the world. View the solar system, the moons of Jupiter, Saturn's rings - any visible object in the sky

£14.95

DISK VERSION
NOW AVAILABLE

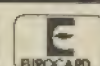
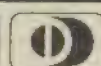
DEATHSTRIKE

An exciting 'Scramble' game. Maneuvre your ship through alien territory, gain points by hitting targets with bombs and missiles. Your final objective is to destroy the mothership with an accurately placed bomb. A fast addictive game with excellent graphics.

£17.95

TALENT+

Stone Street, North Stanford, Ashford,
Kent TN25 6DF.
Tel: 0303 813883 Fax: 0303 812892 Telex: 966676 PMFAB G



The main listing is a tiny, powerful routine by *QL World* reader Phil Spink which lets you multi-task 'bad-tempered' software like the Psion packages or games which do not display a cursor.

Taskforce is so-called because it can force most programs normally loaded with EXEC_W to multi-task. *Taskforce* lets you switch input to Quill, Archive or other keyboard-hogging programs with Control C, as if they were well-behaved tasks. *Taskforce* works with compiled SuperBasic as well as Psion software; it gives multi-tasking control over machine code games like *Tower of Valagon*, Alan Pemberton's *Q-Liberated* adventure. There is no problem multi-tasking SuperBasic with Psion software, even on a 128K computer.

Now you can use SuperBasic commands like COPY, DELETE and DIR while running another task; you can even run a complete Basic program at the same time as Quill, or as many other tasks as you can fit into memory.

Taskforce is extremely frugal. Among other configurations we tested it on a minimal QL set-up — 128K, two Microdrives running Quill and SuperBasic at the same time. We had 7.5K memory free for SuperBasic and were able to type more than 1,200 words into Quill — about three A4 pages — before data started to spill to the DEF_TMP file on Microdrive 2.

You can run *Taskforce* several times on an expanded machine to get Quill, Abacus, Archive, Easel and SuperBasic all running at once. You can buy expensive programs to do this kind of thing. The most famous are *QRAM* and *TaskMaster* but there must be at least a dozen in all.

Usually they are bought to get the Psion software multi-tasking but they do all kinds of things besides. In particular, they gobble RAM with code and screen images, slow Qdos with extra checks and polling routines, and alter the behaviour of the system, making them incompatible with one another and some application programs.

When you see 'ORAM compatible' on a package, it normally indicates special effort on the part of the developer. Nowadays, compatibility with most QL front-ends is a design objective, not something to be taken for granted.

As you might expect from DIY Toolkit, *Taskforce* is classically simple. It makes all possible tasks work like well-behaved ones. Rather than introduce mouse control or ALT keys it sticks to the 'Control C' task-switching of a standard QL. *Taskforce* uses no RAM once tasks are loaded; it is just a few lines of Basic, needed only when you load new tasks. It is highly compatible and, best of all, it is free in this month's *QL World*.

The listing of *Taskforce* is being printed from SuperBasic as I type this line into

DIY TOOLKIT

This month Simon Goodwin discusses System Variables and shows how you can re-configure the QL system with well-chosen PEEKs and POKEs.

Quill 2.3. I still prefer my Video Genie but that is broken. It has half the CPU power of a ZX-81 but I have written more than 200 articles on it painlessly since 1980.

Back on the QL, there is another problem to be solved before we can get the Psion programs to multi-task properly. Quill and its siblings assume that they have a monopoly of the machine and grab almost all available memory as they start up. Normally Quill 2.3 leaves only 5.5K of free memory for SuperBasic and file-buffering Slave Blocks. This limits you to 4K of Basic on AH and JM versions of the QL, or 4.5 on the JS or MG. All systems prior to MG lock-up — stopping all tasks dead — if you exceed those limits while discs or Microdrives are running. Be careful when you multi-task programs in limited RAM; be aware of the context when you swap between tasks and keep SuperBasic in check with CLEAR or NEW.

Taskforce lets you conceal expansion memory from greedy tasks. You can divide memory into arbitrary partitions for many tasks, whether they have internal 'dataspace' or grab it from outside. Any slack is available to SuperBasic or used for Slave Blocks. You can work on big SuperBasic programs as you run Psion software.

When you run *Taskforce* it reads the system variables SV.FREE and SV.BASIC. One points to the start of filing system 'Slave Block' memory, the other points to the movable edge of Basic memory. Thus it can display the amount of free memory available, in K. You can get an extra 2K later by deleting *Taskforce*.

Memory reserve

You are asked to enter the amount of memory you want to reserve, in kilobytes. That much memory will be hidden when the task loads and starts up. If you press Enter no memory is hidden.

Before loading a greedy task, *Taskforce*

allocates space for a dummy array, DUMMY\$, made up of strings, each 1K long including the two-byte length. When the task has loaded *Taskforce* performs a CLEAR, Basic de-allocates the array and the space is returned to Qdos.

Who needs machine-code? At first we used commercial Toolkit commands to develop *Taskforce*. I expected the final routine to be written in machine code, like other DIY Toolkit utilities, but *Taskforce* uses nothing but standard SuperBasic.

Now the tricky part. We need code to give any task a cursor we can select with CONTROL C. We can determine this by experiment. Turn on the QL, press F1 or F2, then load Quill with EXEC, rather than the normal EXEC_W. SuperBasic continues to run after the task starts but that does not help you use Quill. As soon as the SuperBasic cursor appears the interpreter grabs all input and Quill is frozen, waiting for a keypress which never comes.

Quill re-connect

The same is true for Archive, Abacus, Easel and many other programs. Quill is there and running, but everything you type goes to SuperBasic, so you cannot use Quill. We need to find the Quill input channel and re-connect it to the real world.

Basic is still running, so let us try a few PEEKs and see if we can find the channel. Before loading the task, *Taskforce* reads the 'tag' which will be used to identify it. The value is held in a system variable SV.JBTAG. It is incremented for every new task, so every task has an exceptional tag, apart from the first, which has the same tag as the 'permanent' task, SuperBasic.

We fix this quirk by POKEing the tag value to 1 before the first task is loaded. This is a POKE in the nature of an initialisation bug-fix. Once the task has loaded with EXEC it shares processing

-TASKFORCE-

with a7 ABACUS

large ASD-W ch?

QL World DIY TOOLKIT - March 1989 - Simon N Goodwin.

Taskforce LISTing:

```

100 REMark TASKFORCE utility program
110 REMark QL WORLD DIY Toolkit 3/89
120 REMark Copyright 1989 Phil Spink
130 :
140 CLS
150 REMark Free RAM = (SV.BASIC)-(SV.FREE)
160 free_k = INT((SYS_L(16) - SYS_L(12))/1024)
170 PRINT "TASKFORCE", free_k; "K bytes free."
180 INPUT "Enter task name & device"! task_name$
190 INPUT "Enter reserved space in K"! space$
200 :
210 REMark Reserve memory and load task
220 space = "0" & space$
230 IF space < free_k AND space >= 1
240   DIM dummy$(space-1,1022)
250 END IF
260 IF SYS_W(96) = 0 : POKE_W SYS_VARS+96,1
270 task_tag = SYS_W(96)
280 EXEC task_name$
290 PAUSE 200 : REMark Delay to allow memory allocation
300 :
310 REMark Enable cursor of task's first CON channel
320 ch_bas = SYS_L(120)
330 last_ch_num = SYS_W(114)
340 FOR ch_ptr = ch_bas TO ch_bas+last_ch_num*4 STEP 4
350   REMark Is the channel open?
360   IF PEEK(ch_ptr) <> 255
370     ch_def = PEEK_L(ch_ptr)
380     REMark Is its driver the same as for #0?
390     IF PEEK_L(ch_def+4) = PEEK_L(PEEK_L(ch_bas)+4)
400       REMark Is it owned by the correct task?
410       IF PEEK_W(ch_def+8) = task_tag
420         REMark Is it too big to be a SCR definition?
430         IF PEEK_L(ch_def) > 120
440           POKE ch_def + 67,1 : REMark Set SD.CURF
450           EXIT ch_ptr
460         END IF
470       END IF
480     END IF
490   END IF
500 NEXT ch_ptr
510 PRINT "WARNING! No CON channel in"! task_name$
520 END FOR ch_ptr
530 CLEAR
540 STOP
550 :
560 DEFINE FuNction SYS_L(addr)
570   RETURN PEEK_L(SYS_VARS+addr)
580 END DEFINE
590 :
600 DEFINE FuNction SYS_W(addr)
610   RETURN PEEK_W(SYS_VARS+addr)
620 END DEFINE
630 :
640 DEFINE FuNction SYS_VARS
650   RETURN 163840
660 END DEFINE

```

bytes for a CONSOLE channel, less for an SCR channel.

The second long word CH.DRIVER points to a table of addresses for the code which sends data through the channel. This value is identical in SCR and CON channels but different for all other types. The first channel in the system table should be the SuperBasic #0, which is always connected to the console; otherwise the QL is likely to crash. Taskforce knows the tag of the task for which it is looking and checks it against CH.OWNER, the next word in the channel details.

Spink tried a technique from Chas Dillon's classic *Filebound* program to put characters into the channel. It worked. Now he could use Basic as normal or run a short SuperBasic program to queue characters for Quill.

This is clever but it is not good enough. The Basic loop takes up memory while you word-process and makes Quill even slower. If you hold down keys, the Quill buffer overflows and the Basic stops with a 'not complete' error. If you disapprove of POKES but have perhaps forgiven the one to SV.JBTAG you might like to compile such a program.

Spink decided to POKE the channel details to set SD.CURF, the cursor flag. A cursor appears, usually at the left edge of the task windows, and you can select that task with Control C. A warning is displayed if a task has no console channel. This may mean that the task has aborted, perhaps because you strangled it with tight memory limits.

I hope you enjoy this month's software project. Credit for the lateral ideas is owed to Spink at Creative CodeWorks, who conceived the prototype Taskforce routine.

Next month I shall offer a new batch of original and useful SuperBasic commands. Please write to let me know what new commands you would like to see featured.

User notes

Taskforce is very easy to use because it tames badly-behaved tasks so that they work like well-behaved ones. Each task has a cursor; in Quill it is at the extreme top left corner of the screen, out of sight on TVs and some monitors. Taskforce just turns on the cursor of the first console channel used by the task, so the position varies depending on the program.

The first console channel is picked because the default channel for INKEY\$ and PAUSE is #0 and that is the first one set up by any compiled task.

SuperBasic programs usually are written as the only task on the machine so there is no need to give them a cursor as a 'handle'. EXEC_W will run a compiled version but it will not multi-task. You will probably need Taskforce to add a cursor if you want to compile the code and run it, unchanged, with EXEC.

time with SuperBasic. To give it time to start and allocate memory, Taskforce pauses for four seconds before trying to find the task console channel.

Almost every task opens a console channel so that it can read characters from the keyboard. A few programs, mainly games, rely on KEYROW alone. Without a cursor they receive input only while they are the only task expecting data.

Tasks do not have to display a cursor. As soon as another task displays a flashing cursor it grabs the keyboard and there is no way you can get back to the first task

unless it has a cursor you can select with Control C.

The trick is to look through the system channel table. System variable SV.CHBAS points to a table of SV.CHMAX long words. Each long word contains \$FF????, for a closed channel, or the address of a particular table of channel details.

Every channel has its table of details; the size and content varies depending on the device. The first long word is the length of the table. This varies on different QL systems but should be more than 120

Psion programs and most other machine code tasks use several SCR windows but only one CON window for input. In its model of the computer there is only one keyboard channel, so our code works well by picking up the first.

There are some weird tasks around and it is easy to crash 'task management' programs. Taskforce is remarkably tolerant, so long as the computer is running Sinclair original Qdos, perhaps with toolkits and add-on devices. QRAM and the Thor window manager may interact badly with Taskforce but anyone using them does not need Taskforce.

The worst case is usually that Taskforce will leave a task dormant rather than turn it on. A message appears and you are still in control with SuperBasic. You can remove the task and try again with EXEC_W. In this case the task is probably using KEYROW, so it would be impracticable to multi-task it with any other program requiring input anyway.

Taskforce does not gobble memory with screen images, at 32K per display. Press SHIFT-F5 to re-draw the screen of Psion packages; most other programs have similar keys or use a scrolling display.

You may need to go by way of Basic if the screen mode has changed. Type MODE 8 or MODE 4 if necessary before swapping back to the old task or the re-drawn screen may not fit the window. MODE changes already force the system to re-draw the borders of windows.

Technical notes

The problem with low-level hacking, PEEKs and POKEs in particular, is that it tends to produce different results on different machines. Taskforce is stuffed with 'magic numbers' — addresses and offsets from the Qdos documentation, some of which might vary theoretically between QL versions.

The first rule is always to trace through from the System variables. System variables were introduced in the DIY Toolkit Index of Terms in August last year.

Tasks and channels do not move once they are set up, apart from usually PEEKing and POKEing them consistently.

Channel addresses vary widely between QL systems. They depend on RAM size, add-ons and even the order in which you use devices. Unfortunately system variable addresses are not guaranteed to stay the same on all systems. Taskforce recognises this as a fact of life; it has been designed to run on virtually any standard QL version without changes. The absolute base address is written as a function; to suit Thors, forget the last three lines.

Normally people use PEEK with an absolute address to read the system variables. All QLs and some Thors keep system variables from address 163840, so this usually works. Some systems move the variables elsewhere. The Qdos speci-



cation documents only their offsets from the start so we have packaged the normal base address into a function at the end of the program.

Peek and poke

Thors have a resident function to tell you where the system variables are to be found — SYS_VARS returns the address of SV.IDENT. In Qdos you can get this by reading A6 in Supervisor mode, or calling MT.INF (TRAP #1, DO=0) for an address in A0.

You can do other interesting things by PEEKing and POKEing the system variables. POKE SYS_VARS + 146,9 sets the TAB key to swap between tasks, instead of CONTROL C. The code of TAB is 9. POKE SYS_VARS + 146,3 to restore CONTROL C, or try another code.

PEEK (SYS_VARS+55) tells you your QL network station number. Use PEEK (SYS_VARS+238) to find the number of the currently-running Microdrive, or zero if they are asleep.

Tasks can PEEK or POKE SYS_VARS+51. SV.SCRST to adjust or simulate the effect of CTRL-F5 which pauses the display.

Line 160 of the program reads the system variables to find the amount of free memory. That is the amount free for Slave Block buffers; you should always leave at least 1K when drives are in use. On a QL



this gives the total RAM capacity of the machine and the amount of RESPR space allocated:

PRINT SYS_L(32)—131072.
SYS_L(32)—SYS_L(28)

You can find the real amount of memory used by a SuperBasic program when it runs. On the QL, tokenised code usually takes much more memory than the listing text in a SAVE file; the size also depends on the number of Toolkits you have loaded, whether you use them or not:

PRINT SYS_L(20)—SYS_L(16)

You will find more ideas in Andy Pennell's *Qdos Companion*, formerly published by Sunshine Books.

By now good programmers must be wondering why we do things like turn on a cursor with a POKE rather than a Qdos system call. The answer may be obvious to some; the POKE works and, in this case, the system call does not.

The red blob on a Psion display is a block rather than a real cursor, because it does not flash and you cannot switch control to it.

There is no legal way to turn on the cursor of a Psion program while it runs. The problem is that only one call can be issued on a particular channel at any time and when the Psion software is not busy it waits for the next input character, tying up its console channel.

You cannot use CURSOR_ON or CURSEN, even if you determine the appropriate channel identifier, because the channel is already in use and cannot accept other instructions until it gets some input, which is the reason you want to turn on its cursor.

You cannot use Qdos so you have to sneak past it with a POKE, which is definitely hacking and arguably bad practice. In this case, it happens to work extremely well — better than expensive front-end programs, all of which have compatibility problems.

Taskforce is very tolerant. We tested it on ROMs from JM to MG, on British and Korean-made QLs, 128K and expanded, disc and Microdrive.

Even so, it can be fooled by other programs which change the behaviour of Qdos, Qram and the Thor windowing environments and alter the addressing of channel details so that a pure Basic program has no hope of finding the correct place to POKE. The length of the channel block can vary between Qdos versions but the cursor flag is always at offset 67 when using Sinclair display drivers or true compatibles.

Windowing programs mess this up. In general, they duplicate the function of Taskforce so it is unlikely you will use both at once. It is not too difficult to write, a window manager in compiled SuperBasic with these PEEKs and the Turbo MOVE—MEMORY.

STRONG COMPUTER SYSTEMS TEL (0267) 231246

BRYN COTTAGE PENIEL CARMARTHEN DYFED SA32 7DJ

VISA & ACCESS

CANON PW1080A 80 col. PRINTER
Tractor & Friction + Para Interface

Just £219

CANON A55 136 col. PRINTER
Tractor & Friction + Para Interface

Just £279

Miracle Parallel Interface — £29

RIBBONS Brother M1009 — £5

Quendata — £6 Taxan/Canon — £8

Shinwa/MT80 — £6 Citizen 120D — £6

Epson LX — £5 Epson RX/FX — £6

SP1000A/180 — £7 SL80AI — £6

2000 shts. Fanfold Paper — £18

Philips 7502 Mono. Monitor — £95

Philips8833 Colour Monitor — £295

10 Cartridges + Transform Box — £23

20 Cartridges + Transform Box — £40

QL Keyboard Membrane — £6

4 Way Spike Suppression Block — £25

QL Serial Cable — £8

MCS MEMODISK DRIVE INTERFACE

Specification:-

* Parallel Printer Interface

* 512K Onboard RAM

* Multitude of Toolkit Commands

Memodisk — £170

Memodisk + Single NEC Drive £265

Memodisk + Dual NEC Drives £325

Cumana Interface 0K — £69

Cumana Int. + Single NEC — £160

Cumana Int. + Dual NEC — £220

Single NEC Drives — £99

Dual NEC Drives — £169

Bare NEC Drive — £69

NEC Drives are 3.5" DS/DD Third Height

Box of 10 DS/DD 3.5" Disks — £14

Lockup 3.5" Storage Box — £9

L/U Storage Box + 20 Disks — £29

3.5" Drive Cleaner Kit — £5

OTHER QL HARDWARE PLEASE CALL

PLEASE CONTACT TK COMPUTERWARE FOR ALL SOFTWARE REQUIREMENTS 0303-81-2801

DE BONDT ELECTRONICS

LV HOEYMISSENSTRAAT 50
2910 MALDEREN — LONDERZEEL, BELGIUM

TEL: 052/33.16.56
FAX: 052/35.8395

Z88 PROGRAMMES

ZECK

Spelling checker with a standard library which can be enlarged very easily by the user. The only limit to the library is the limit to the memory and the storage capacity of the medium.

ZEAD

Prints your logo on your letter. A real drawing programme makes the designing very easy. You can use it with almost every printer.

ZAPHICKS

Converts your numbers of a pipedream document into clear graphs. A whole gamma of two or three-dimensional representatives, easy to use. You can use it with almost every printer.

Name

Address

.....

.....

Payment: Cheque or Credit Transfer to:

GENERALE BANK: 293-0565771-25

Accepted, pst = export price

pst = Pound Sterling

bfr = Belgian Francs

ZERGE

An easy to use, fast and flexible mailmerge.

ZEDIT

Programming in Basic becomes very luxurious with this Basic Screen Editor. Besides the standard possibilities of a Screen Editor, this gives you a lot of utilities which make life much easier. Even the use of a library is supported.

ORDER FORM

ITEM	PRICE	QUANTITY	PRICE
ZECK	PST BFR 5395		
ZEAD	PST BFR 3695		
ZAPHICS	PST 49 BFR 3995		
ZERGE	PST 47 BFR 3795		
ZEDIT	PST 49 BFR 3995		
TOTAL:			

EXPORT ENQUIRIES WELCOME

THROUGH THE GLASS DARKLY

A truly on-screen control circuit. Andrew Armstrong's experimental circuit is connected to the QL only by a piece of Blu-tack and is suitable for simple devices.

The QL is not often used to control such items as electric motors, lamps and so on but it is capable of doing so. The problem is that to do so one has always needed a special interface adapter, which plugs in where you may wish to plug something else. There is also the problem that unless the interface is opto-isolated, there is always the chance that a serious malfunction further down the line will damage the QL.

Here is a DIY project to construct an opto-isolated interface using the monitor or television set to provide isolation. The principle is simple — small squares are lit on an otherwise blank screen by the control software. Photodetectors stuck to the screen, using a small piece of magic tape or Blu-tack, detect whether or not a particular position is illuminated and the control electronics detects the response of the photodetector and switches the circuit to be controlled accordingly.

This method has its limitations, of course. It may not be practical if very many circuits are to be controlled and it does not permit feedback to the control

program. This method would not be very suitable for positional control, as for example with a robot arm. The program would have no means of checking the position of the arm before moving it, nor could it detect when the required point had been reached. Still, this control method is simple and avoids all risk of damage to the QL, even in the event of catastrophic failure of the interface unit.

Optical detection

Though the control squares on the screen may look as if they are continuously-illuminated, they are lit only while the raster scans past that area and for a small additional period while the phosphor continues to glow after it has been energised. The detection system must take account of this effect and not try to switch on and off each time the spot scans past the detector. The circuit diagram shown in figure one illustrates this. When the RPY58A LDR (light dependent resistor) is illuminated it discharges C1. The time constant of R1 and C1 is

such that it does not recharge again before the next time the LDR is illuminated. This is helped by the slow response of the LDR.

This particular LDR was chosen in preference to any other means of detection, such as a phototransistor, because it is a 5mm. square plate which is convenient to fix on to the face of a cathode ray tube. Certainly other detectors would work in this circuit but probably none so conveniently. If, however, you want to experiment with a different type of detector it may be a good idea to replace R1 with a lower value, say 10K, and insert a 100K potentiometer in series. C1 should be increased to a 1 μ F electrolytic capacitor, with its negative end to ground. The potentiometer should be adjusted until the circuit switches correctly with whatever photodetector is chosen.

The circuit shown in figure one is of just one channel, adequate for a first experiment. Its functioning is straightforward. IC1 is a quad comparator IC, of which one quarter is used per control channel. The inverting input of the comparator measures the voltage at the junction of R1 and the LDR. The dark-resistance of the LDR is specified as 200K or greater, so the voltage on the non-inverting input when the LDR is dark is likely to be almost 10 volts.

The bright resistance of the cell is specified as 600 Ω at an illumination of 50 lux. The brightness achieved by a monitor is unlikely to reach this level but the resistance of the cell when reasonably illuminated should be only a few kilohms at most. Under these conditions the voltage on the inverting input of the comparator will be less than 2V.

The non-inverting input is biased to half the power supply voltage, i.e., 6V, by R2

Screen Hardware Controller

```
100 start_screen
110 DIM byte(163,2)
120 j=1
130 RESTORE 230
140 READ x,y:IF (x+y)=0 THEN GO TO 180
150 byte(j,1)=x:byte(j,2)=y
160 j=j+1
170 GO TO 140
180 IF INKEY$="" THEN
190   j=RND(1 TO 162):IF j=0 THEN j=1
200   onn byte(j,1),byte(j,2):GO TO 180
210 END IF
220 STOP
230 DATA 4,0,3,1,5,1,2,2,6,2,2,3,6,3,2,4,4,4,
    6,4,2,5,4,5,6,5,1,6,7,6,1,7,7,1,8,7,8
240 DATA 28,0,28,1,28,2,28,3,28,4,28,5,28,6,
    28,7,28,8
250 DATA 10,0,12,0,14,0,10,1,12,1,14,1,16,1,
    10,2,16,2,10,3,16,3,10,4,12,4,14,4,16,4,
    10,5,12,5,14,5,10,6,10,7,10,8
260 DATA 28,10,28,11,28,12,28,13,28,14,28,15,
    28,16,28,17,30,17,32,17,34,17,28,18,30,
    18,32,18,34,18
```

```
270 DATA 38,10,38,11,38,12,38,13,38,14,38,15,
    38,17,38,18
280 DATA 1,10,3,10,5,10,5,10,7,10,1,11,3,11,5,
    11,7,11,1,12,1,13,1,14,3,14,5,14,1,15,3,
    15,5,15,1,16,1,17,1,18
290 DATA 13,10,12,11,14,11,11,12,15,12,10,13,
    16,13,10,14,16,14,10,15,16,15,11,16,15,
    16,12,17,14,17,13,18
300 DATA 19,0,21,0,23,0,19,1,21,1,23,1,25,1,
    19,2,25,2,19,3,25,3,19,4,21,4,23,4,19,5,
    21,5,23,5,19,6,23,6,19,7,24,7,19,8,25,8
310 DATA 31,0,31,1,31,2,31,3,31,4,31,5,31,6,
    31,7,33,7,35,7,37,7,31,8,33,8,35,8,37,8
320 DATA 22,10,21,11,23,11,20,12,24,12,19,13,
    25,13,19,14,25,14,19,15,25,15,20,16,24,
    16,21,17,23,17,22,18,0,0
330 DEFine PROCedure start_screen
340 PAPER 0:INK 7:CLS
350 END DEFine start_screen
360 DEFine PROCedure onn(x,y)
370 x1=1+(x*10):x2=1+((x+1)*10)
380 y1=1+(y*10)
390 BLOCK 10,10,x1,y1,7
400 BLOCK 10,10,x2,y1,7
410 END DEFine
```

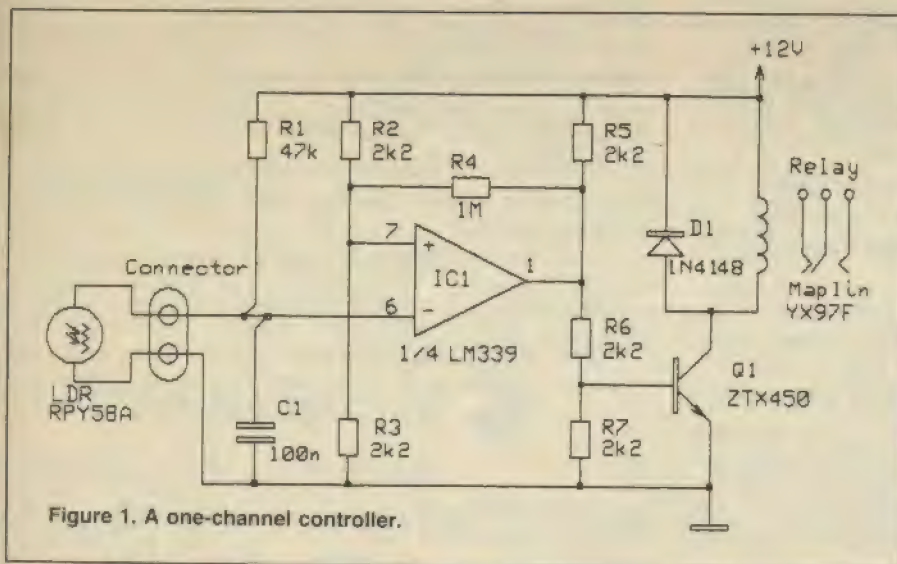


Figure 1. A one-channel controller.

and R3, with R4 providing a small amount of positive feedback to make it switch cleanly. When the LDR is illuminated, the voltage on the inverting input is below that on the non-inverting input, so the output of the comparator is high. This switches on Q1, which switches on the relay, and hence switches on whatever circuit the interface is controlling.

A relay was chosen as the output device because it has the most universal application. If the recommended relay is used it can control mains or low voltage, AC or DC, an ideal choice for an initial experiment. If the unit is intended only to switch AC mains circuits, an alternative would be to use an opto-isolated triac to trigger a triac rated at the required current and use this to switch the load.

Both a relay and an opto-isolated triac isolate the mains voltage from the rest of the circuitry but, to make this isolation effective, connections must be made correctly, with adequate insulation to avoid short circuits. If the unit is built on Veroboard, at least two adjacent tracks either side of all mains connections should be totally removed to provide a reasonable isolation gap. Remember that mains voltages can be lethal and all precautions must be taken to make sure that live wires are properly insulated and that mains cannot reach any part of the circuit which is not supposed to carry it, including the user.

If fairly low-powered 12V DC circuits are to be switched, the BC182 output transistor could be replaced with a TIP126 Darlington transistor, which provides more gain and can switch a higher current. This could then switch the load directly without using the relay.

Both of these alternative output suggestions are best pursued after the basic unit has been made to function.

Only one control channel is shown here and it is probably best to build only one for the initial experiment. Once this is working, the other three parts of the IC may conveniently be connected in three more control circuits. Because the chosen IC is a quad comparator, if many circuits are to

be controlled it will be convenient to build them in groups of four. A list of the pin numbers is given in figure two.

Power supply

A source of 12V DC is required to run this unit. Because the whole virtue of it is that it has no direct connection to the

Figure 2. The pin-outs of the LM339

Figure 2.

Pin	Function
1	Output 2
2	Output 1
3	Positive supply
4	Inverting input 1
5	Non-inverting input 1
6	Inverting input 2
7	Non-inverting input 2
8	Inverting input 3
9	Non-inverting input 3
10	Inverting input 4
11	Non-inverting input 4
12	0V
13	Output 4
14	Output 3

QL, it needs a separate power supply. It is very tolerant of different supply voltages, so long as the relay coil is properly energised, and would prob-

ably work from a 9V battery. If it is intended to be used for more than brief experiment, it is better to use a mains power supply and a suitable circuit is shown in figure three.

All the components used in this project are available from Maplin Electronics, whose catalogues are available in newsagents.

Software

This project is intended to demonstrate what can be done and what people's appetites for hardware control. Accordingly, I have included a listing of a simple program to light up a few squares on the TV or monitor to check that the system works. When the system is shown to work you can write your own program, perhaps incorporating the square drawing procedure from my listing.

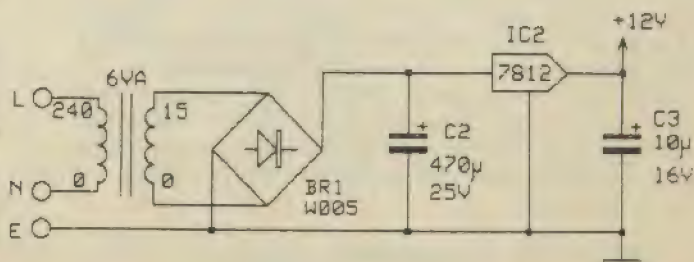
It would be a good idea to enter and run the program exactly as it appears in the listing, to make sure that the extreme contrast levels which it generates do not upset the functioning of your TV or monitor. This is very unlikely but it could happen with some sync-separator circuits and it would be a pity to spend money on components only to find that the control program upsets the vertical or horizontal hold on your display. The program as written lights a sequence of squares which should upset the monitor if anything is to do so.

Assuming that there are no problems with the monitor when the circuit is first tested, you should adjust the brightness level to approximately the middle of the range, which makes the unit switch cleanly.

No printed circuit board layout has been provided with this project. It is assumed that constructors will build it on Veroboard and as such it should not be attempted by readers who have not built electronic projects before. Readers who are interested in the software might find someone with electronic experience to help them build the circuit. If sufficient readers write requesting it, a PCB layout may be published at some point in the future.

While we make every effort to ensure that projects function correctly, QL World accepts no responsibility for loss or damage arising from electronic construction.

Figure 3. Power supply circuit.



Ferret




Ferret is a new utility that hides in the background until needed. When you can't remember the filename of the doc or program that you were working on. You simply call up ferret and send it looking for the file by giving it a clue about the content.

If you wrote to Quanta then simply type 'Quanta' and tell Ferret where to look. It will fly through your disk or Mdv and read all the files, looking for a match. Any file that contains the search text is named and the file contents around the match are shown to you if required.

The program searches only specified files, e.g. _doc or _bas and will either search the whole file for a match or will just the first 1-5K of it. This can be used by leaving notes in the header of a Basic program which can subsequently be searched for.

Ferret is designed to be quick and easy to use and will work on all QL's and memory sizes. It comes on 3.5" disk or Microdrive and is a must for anyone with an extensive disk or Mdv collection. During searching the filename is displayed together with the file size - you can see the program working. The next time you can't find a file don't waste time looking for it, just send your ferret after it.


 **Sector price £12**

Printers

Star LC10 Colour

The new Star LC10 colour printer is an 8 column printer that works superbly with the QL.


The 8 colour ribbon only costs £6 to replace - less than the cost of black ribbons for some printers. The colour commands are easily implemented - simply type "((C))" followed by the colour number required. The LC10 colour has 6 NLQ fonts all of which give excellent output.

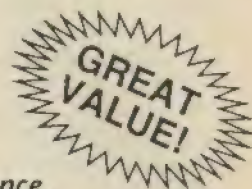
 **Sector price £274**

Star LC2410

This 24 pin version of the LC10 gives excellent NLQ output for professional looking correspondence.

- 80 column carriage
- 170 cps draft
- IBM and Epson compatible
- 57 cps NLQ
- Centronics interface
- Tractor and friction

 **Sector price only £374**



Sector Software


The best programs and peripherals for the QL

Phillips CM8833 Stereo Monitor

A dark screen monitor with composite video, RGB linear and RGB TTL inputs.

Plainly speaking it is a very good monitor that is well suited to the QL or any other computer. The monitor has a green screen button to convert from colour to green screen and back again at the press of a button. It can handle all 4096 colours available on the Amiga and has full stereo sound output through its two built in speakers. Not much use on the QL, but if you change computers this monitor will work just as well with your new one. The Phillips CM8833 is the same price as the Discontinued Microvitec QL monitor, but is much, much better.


~~RRP £300~~

 **Sector price £260**

Star LC10

This is a mono version of the LC10 colour.

- 80 column
- Centronics interface
- tractor and friction feed
- Paper parking facility
- IBM and Epson compatible
- set fonts from front panel


 **Sector price £239**

Brother M1109

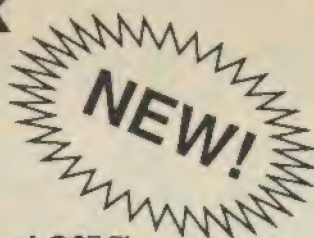
A 9 pin print head, 80 column, 120 cps draft, 25 cps NLQ printer with many features for a very low price.

Has both Centronics and serial interfaces. It is an ideal budget priced printer, but with features found on much higher priced machines. This special price cannot be guaranteed beyond the end of March as a price rise is imminent.

- 80 column
- IBM & Epson FX80 mode
- Tractor and friction feed
- 25 cps NLQ
- 120 cps draft
- Roll paper option

 **Sector price £155**

FlashBack Special Edition



— for the expanded QL and CST Thor

After months of blood, sweat and tears, a massive effort by ace machine code programmer Peter Jefferies, technical support by Dilwyn Jones and Chas Dillon, we are delighted to announce an entirely new version of FlashBack, FlashBack Special Edition.

FlashBack Core System

By Peter Jefferies

Peter has re-written FlashBack introducing a host of improvements and extra features, only a few of which can be listed here due to constraints of space.

Now written entirely in re-entrant hand coded assembler. This means that you can now use multiple copies of Flashback SE at any one time and transfer details between files.

- Much slicker screen handling, faster scrolling etc.
- Separate Group and Order (Index) commands provided
- Successive record selection (Grouping) now supported
- Six options of file indexing now available: these include number handling (leading zeros optional)
- New powerful string match update from View screen
- Saving of selected subset of current file to disc/Mdv
- Two types of search and replace supported. One lightning fast, the other allowing on screen step-by-step consent
- New 'quit program' facility provided
- Edit line (Search, Group, Read etc.) greatly improved
- Ad-hoc record selection/rejection on subsequent Groupings
- Many quick-key presses for next, back, repeat search etc.
- Entirely compatible with existing Falshback files
- Compatible with Qram

New extended config program

By Peter Jefferies

Greater choice of turn on key and variations of record separator to printer.

- New extended import program
- extensively modified by Chas Dillon.
- More flexible when reading in Archive files, allows sub record definition at import and mistakes, restart option etc.

Report Generator

Planned by Chas Dillon Written by Dilwyn Jones

This is the feature that hordes of existing users have been screaming for.

The report generator provides flexible printer output from a FlashBack file. Allows columnar printing of details, labels, mailmerge, document and invoice production etc. Includes printer driver and installation utility which allows for additional fonts and 10 translates.



Sector price Only £40

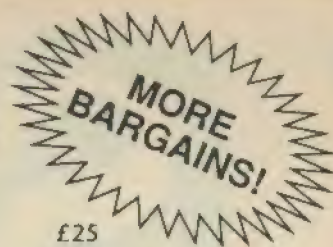
FlashBack Special Edition will be available in April. Standard FlashBack will continue to be available at only £25 inclusive.

Upgrades for existing FlashBack users

Send your FlashBack master and £15, mark your envelope 'FlashBack Upgrade'. You may upgrade from Microdrive to disk. Make this clear or you will receive the upgrade on the same media as you send.

Demand will be high and orders will be dealt with in date sequence.

Other Products



Software

Taskmaster	£25
Overdrive	16
Clip art 1-7	£6 each
Keyboard membrane	£6
Editor Special Edition	£50
Send today for our comprehensive catalogue	

STOP PRESS.....

Massive reductions in Z88 prices

Z88 Computer Was £287 Now £230

Z88 All in one kit:

Z88 computer, 128K RAM, Mains Adaptor, custom carry case, Batteries, User Manual Was £329 Now £287



Sector Software

39 Wray Crescent, Ulmes Walton, Leyland, Lancs PR5 3NH

Tel 0772 454328, Prestel Mailbox 772454328

All prices include VAT and P&P

The North's very own Sinclair fair!

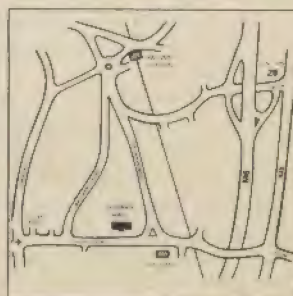
THE NORTHERN SINCLAIR SHOW

The first Northern Sinclair show will be held at Stokes Hall, Leyland, Lancashire, on April 8th 1989. Organised by Sector Software, the show will have a similar format to London's ZX Microfair and will be totally Sinclair orientated. Most companies who have anything to do with the QL will be at the show.

Sector Software will of course be there with FlashBack Special Edition, Miracle will be showing its Hard Disk and Digital Precision will be there with the MSDOS emulator. With any luck Clive Sinclair's new satellite TV system will also be on the Sector stand.

As well as the QL related stalls there will be exhibitors from the Spectrum, Disk, Book and accessory markets. The Z88 will be represented with new software releases from Harvester Information Systems.

This show is the first of what we hope will become a regular event. Much depends on the success of this first effort. A good attendance will give us the green light for another show in three months time.



**Don't miss the only Sinclair
Show in the North - April 8th**

Admission £1.50

Doors open 10am



SUPER BASIC

Mike Lloyd continues with the second part of his calculator/base conversion project.

The combined calculator and base conversion utility outlined in last month's SuperBasic feature consists of 363 lines of SuperBasic code divided into some 30 procedure and function definitions. Although the program will not be completely usable until the last menu option definition has been typed-in, readers will be able to make some limited use of the program at the end of each section.

As many as possible of the functions and procedures have been designed for use in other programs with little or no amendment. The listings printed with this month's article perform the essential but thankless task of initialising the program variables and display area.

Fight for space

Programmers' utilities such as *QL-Calculator* must fight for space in a very limited and over-worked area — the computer screen. Its display must therefore be compact without being cramped — and informative without being cluttered. In SuperBasic form it must also be able to share a variables area with a program being developed. All variables must therefore be local to the procedure definitions of the utility and it cannot use DATA lines, so as not to clash with the programs to which it might be appended. The utility is activated by entering the keyword "calc", which is the name of its main procedure.

To keep track of all the listings a modified numbering convention has been used. The listings in this article are numbered 1.0, 1.1, 1.2 and so on. Those in the next issue will be numbered 2.0, 2.1 and so on until the program is complete. The line numbers for listing 1.0 are between 1000 and 1099; those of listing 1.1 are between 1100 and 1199.

The program begins at listing 1.0 with the procedure which bears the name used to invoke the whole program. It has the maximum number of LOCAL statements

Listing 1.0

```
1000 DEFine PROCedure Calc
1005 LOCAL Num$(10),      B$(10)
1010 LOCAL Valid$(36),    BaseVal$(4), BaseTag$(6)
1015 LOCAL Base$(4,3),    Store$(5,10), Const$(5,20)
1020 LOCAL Prt$(2,3),     Mode$(2,4),  Menu$(5, 10)
1025 LOCAL X_Org,         Y_Org,       TV_Mode
1030 LOCAL PrtOn,         In_Val,      Out_Val
1035 LOCAL In_Base,      Out_Base,     IntOnly
1040 Init_Vars
1045 Init_Arrays
1050 Init_Screen
1055 Main_Loop
1060 Quit_Calc
1065 END DEFine Calc
```

Listing 1.1

```
1100 DEFine PROCedure Init_Vars
1105 B$ = FILL$(" ", 10): Num$ = B$
1110 BaseVal$ = CHR$(10)&CHR$(16) &CHR$(2)&CHR$(8)
1115 In_Val = 1: In_Base = 10
1120 Out_Val = 1: Out_Base = 10
1125 BaseTag$ = " hbo"
1130 Valid$ = "0123456789?????"
1135 Valid$ = Valid$ & ". ?-+*x/"
1140 FOR x = 187, 61,10, 194,27, 232 TO 248 STEP 4
1145 Valid$ = Valid$ & CHR$(x)
1150 END FOR x
1155 op = 18: Ans = 0
1160 PrtOn = 0: IntOnly = 0
1165 END DEFine Init_Vars
```

Listing 1.2

```
1200 DEFine PROCedure Init_Arrays
1205 LOCAL x
1210 FOR x = 1 TO 5: Store$(x) = B$(1 TO 9) & "0"
1215 Base$(1) = "DEC": Base$(2) = "HEX"
1220 Base$(3) = "BIN": Base$(4) = "OCT"
1225 Prt$(1) = "OFF": Prt$(2) = " ON"
1230 Mode$(1) = "REAL": Mode$(2) = " INT"
1235 Const$(1) = "3.141593 PI"
1240 Const$(2) = "131072 SCRN START"
1245 Const$(3) = "65536 64k"
1250 Const$(4) = "1.61 km > miles"
1255 Const$(5) = "0.45 lb > kg"
1260 Menu$(1) = "Store": Menu$(2) = "Fetch"
1265 Menu$(3) = "Constants": Menu$(4) = "Settings"
1270 Menu$(5) = "Clear"
1275 END DEFine Init_Arrays
```

allowed by Qdos; any more would corrupt the Qdos name table. The variables are described when they are initialised in the following procedures.

It is worth noting that all strings have been declared as single-dimensioned arrays. This is mainly to take advantage of the different way in which SuperBasic concatenates fixed-length strings. Additionally, the tasks performed by some of the routines are eased greatly if the strings on which they work are of a consistent length. Finally, it is the preferred way of declaring strings in programs destined to be compiled using the Digital Precision Turbo compiler.

The executable lines of the *calc* procedure are a classic example of a high-level part of a hierarchy of program segments. They show the entire sequence of the program by listing the names of the major segments.

Major variable

Listing 1.1 initialises the major simple variable used throughout the program. The first, *B\$*, is a string of 10 blank characters used to initialise other strings with a command such as:

```
100 Num$ = B$
```

rather than the lengthier and clumsier equivalent:

```
100 Num$ = FILL$ (" ", 10)
```

The *Num\$* variable is used to hold numeric input. It is a string so that the hexadecimal digits *A* to *F* can be used in addition to conventional decimal digits.

The *BaseVal\$* string holds characters representing the four bases — decimal, hexadecimal, binary and octal — used by the program. It allows the bases to be referred to as 1, 2, 3 and 4 rather than as the less helpful 10, 16, 2 and 8.

Input and output can be in different bases, which allows values to be translated between bases as calculations are made. *In_Val* and *Out_Val* are used to indicate the bases currently in use. In a multi-base utility it is essential to tell whether a value such as 1000 represents a decimal value of 1,000, 4,096, 8 or 512. Accordingly, *BaseTag\$* contains appropriate suffixes, a blank for decimal and "h", "b", and "o" for hex, binary and octal.

One of the most crucial aspects of any program is the error-proofing of input. Next month's issue will detail how QL-Calculator copes with this perennial problem but it is helpful to mention now that all valid input characters are stored in a string called *Valid\$*.

The first characters in the string are the familiar decimal digits. There follow six question-marks to occupy positions which are reserved for the additional hex digits. Question-marks are used here to represent "null" characters because they have no arithmetic significance and they are easier to use than the null byte, *CHR\$(0)*.

The remaining characters in *Valid\$*

Listing 1.3

```
1300 DEFINE PROCEDURE Init_Screen
1305 TV_Mode = 1 + (PEEK(163892) > 0)
1310 X_Org = 500 - 200 * TV_Mode: Y_Org = 20
1315 CLS_wndo 32, 10, X_Org, Y_Org, 2
1320 CSIZE 0,0: PAPER 2, 0: CLS: UNDER 0
1325 FOR x = 1 TO 5
1330   CLS_wndo 14, 1, X_Org + 12 + 88 * TV_Mode,
       Y_Org + x * 20 - 16, 2
1335   Hue 0: PRINT "F": x: " ";
1340   BLOCK 2, 10, 16 * TV_Mode, 0, 7
1345   Hue 2: PRINT B$
1350 END FOR x
1355 CLS_wndo 13, 9, X_Org + 6, Y_Org + 4, 4
1360 Main_Menu
1365 PrtOut "* CALCULATOR"
1370 END DEFINE Init_Screen
```

Listing 1.4

```
1400 DEFINE PROCEDURE Set_Wndo (wide, high, xpos,
       ypos, col)
1405 wide = wide * 6 * TV_Mode + 8
1410 high = high * 10 + 4
1415 WINDOW wide, high, xpos, ypos: Hue col
1420 BORDER 2
1425 END DEFINE shadow
```

Listing 1.5

```
1500 DEFINE PROCEDURE CLS_wndo (wide, high, xpos,
       ypos, col)
1505 Set_Wndo wide, high, xpos, ypos, col
1510 CLS: BORDER 2, 0: BORDER 1, 7: BORDER 2
1515 END DEFINE CLS_wndo
```

Listing 1.6

```
1600 DEFINE PROCEDURE Hue (x)
1605 PAPER x: INK 7 * (x < 4)
1610 END DEFINE
```

Listing 1.7

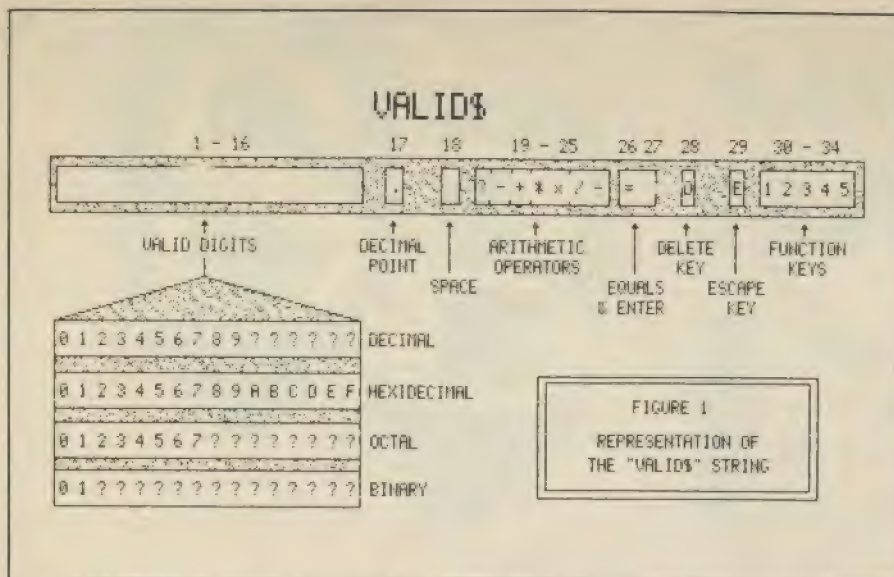
```
1700 DEFINE PROCEDURE Main_Menu
1705 FOR x = 1 TO 5: Show_Menu x, Menu$(x)
1710 Calc_Wndo
1715 END DEFINE
```

Listing 1.8

```
1800 DEFINE PROCEDURE Show_Menu (x, Text$)
1805 Set_Wndo 10, 1, X_Org + 12 + (90 + 18)
       * TV_Mode, Y_Org + x * 20 - 16, 2
1810 PRINT \Text$;
1815 END DEFINE Show_Menu
```

Listing 1.9

```
1900 DEFINE PROCEDURE Calc_Wndo
1905 Set_Wndo 13, 9, X_Org + 6, Y_Org + 4, 4
1910 END DEFINE Calc_Wndo
```



arithmetic symbols are codes for the delete, escape and function keys. There are two symbols each representing multiplication and division. The question-mark among the operators reserves a place for an additional operator such as the exponent.

The final procedure task is to set variables to indicate that the current operator is a space — the eighteenth character in the *Valid\$* string — the "answer" to the current sum is zero and that the printer and integer-only options are turned off. Those defaults can be changed using menu options described later in the series.

Listing 1.2 establishes the initial contents of the multi-dimensioned arrays in the program. *Store\$* is the equivalent of five memory functions on a traditional calculator. The next strings provide English translations for various options. The *Const\$* array is used to hold the value and description of five constants available to the calculator.

The way in which the SuperBasic coercion facility is used to differentiate between the value and its description is described later in the series. The final array to be filled holds the main options which are displayed by default.

Not fussy

The three screen display procedures were designed for use by a suite of programming utilities, some of which will be included on the version of QL-Calculator sold in Microdrive Exchange. The QL-Calculator is not fussy about character size, display mode, window settings and display device, provided some simple minimum criteria are met. The display area needs to be at least 13 characters wide and eight lines deep.

Output could go to a screen window or to a printer, or both simultaneously. The program uses only the SuperBasic default window but its location is changed frequently to give the appearance of many windows being open.

Before the screen area can be produced the display mode must be discovered so that a valid character size can be set and the proper window width ascertained. This is done by using a system variable to set the value of *TV_Mode* to determine their true width. The co-ordinates of the top left point of the display window are held in the *X_Org* and *Y_Org* variables. The window will always appear towards the top right of the screen.

Using the principle that the computer should do as much of the calculating as possible, two procedures have been written to ease the task of defining window sizes. For textual applications it is much easier to define how many character positions the window should display rather than its total width in pixels, which is complicated by character sizes, display mode and borders.

Listing 1.4 establishes the window area without clearing it, allowing the default window to be moved elsewhere on the

screen and returned without affecting the display. Windows are first created using listing 1.5, which additionally draws borders and clears the usable window area.

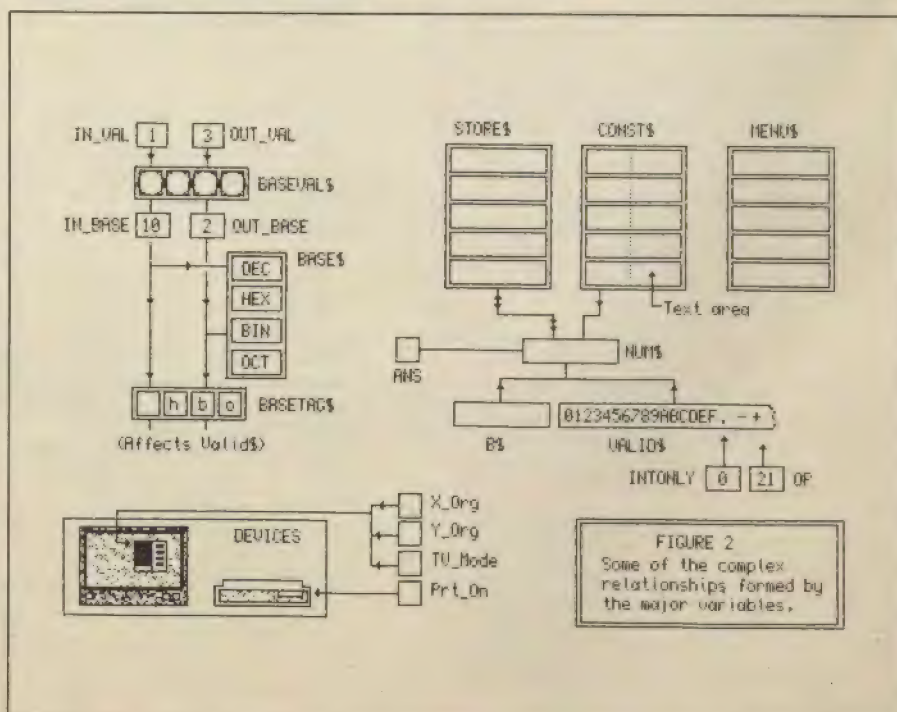
Although the QL colours offer wide variety, the most effective PAPER and INK combinations always include black or white, according to whichever offers the strongest contrast. For QL-Calculator it was decided that the INK colour would be limited to black or white. Listing 1.6 takes a single parameter which is assumed to be a solid PAPER colour. If it is a dark colour, INK is set to white; if PAPER is light, INK is set to black. Thus one procedure replaces two SuperBasic keywords.

Windows

Throughout a calculating session the main display area is used except when the menu is updated. Listing 1.7 displays the five main menu options by calling the *Show_Menu* routine with the menu position and contents as parameters. When this has been done the *Calc_Wndo* routine restores the Qdos window parameters to point to the main display area.

Both the *Show_Menu* and *Calc_Wndo* routines call the *Set_Wndo* option to re-set the default window without clearing the display area.

Once these routines have been entered and a copy of the program saved they can be tested by entering the keyword *CALC*. The program should draw the QL-Calculator window before coming to a halt at line 1055 with a "Not Found" error message. Try running the program in high- and low-resolution modes to see the different displays. Next month's article will deal with the problem of reading, analysing and displaying input.



TF Services

QUICK QL REPAIRS

VRST stock of components & working circuit boards to ensure quick and reliable repair (Usually same day)

QLs tested with Thorn EM1 test rig and ROM software

(MDU hardware extra if required)

£25 (6m gntee)

COMPUTER CLEANER

Much improved mains filters, 40-80 db cut & 3 spike filters, 390 joule cut (3 & 4 way)
Certified X/Y 240ac capacitors

2-way (5a adaptor)..... £14
3-way (5a adaptor)..... £18
4-way (13a trailing socket)..... £24

ASTRACOM Modem

Intelligent buffered modem with text status messages. Hayes protocol, parallel printer port (can be used as 8k serial to parallel printer buffer). 240vac or 9-12vac. Autodial/answer and many programmable registers incl printer logging of RX and/or TX data. BT approved. Can be used with any computer.

U21/23 (300/300 and 75/1200)..... £125
U21/22/23 (adds 1200/1200 + tone ding)..... £257
U22 upgrade to existing model..... £98

All prices include VAT and postage in the UK

QL SPARES

Faulty QL boards (excl plug in ICs)..... £9
Power supply with external heat sink..... £20
Keyboard membrane..... £5 Circuit diags..... £2
68000 cpu..... £8 1377 PAL..... £3
J1 rom set..... £12 JS rom set..... £25
8382 ULR..... £10 8381 ULR..... £10
8849..... £7.50
Other components (sockets etc).... please PHONE

Qualsoft Terminal

Viewdata/VT52/ASCII QL TERMINAL EMULATOR
"Een deluxe communicatieprogramma van Kuissoft"

Multitasking program for electronic mail, PRESTEL etc. Phone directories for RL (yes RL) modems for the QL, autodial (where poss) and logon, two-way FILE TRANSFER to ATARI ST, IBM PC, Psion organiser (via comes link), XMODEM, real time clock/timer, buffered logs to file/printer, transmit files, editable command line, Swedish/Norwegian options, EDL translates, editor etc.

SOLVES ALL PACKAGED MODEM SOFTWARE PROBLEMS
Unbuffered modems usable with Minicore Modem

Software (3.5" or mdv) & manual **£30**

FILE TRANSFER

Programs to transfer text and programs error free (XMODEM) between computers

Available for IBM PC and compatibles, ATARI ST and Sinclair QL. Connects to Psion organiser via Psion comes link

Qualsoft program (per m/c)..... £7.50
Serial lead (same 2 computers).... £10
Complete package for 2 computers. £25

Callers welcome (by appointment only please)



12 Bouverie Place, London W2 1BB (Tel: 01-724 9053)
Fax: 01-706 2379 Telex: 265451 Graf: 7246096453 Prestel: 017249053



THE ALTERNATIVE MICRO SHOW

Horticultural Hall,
Greycoat Street, London SW1.

SATURDAY 1st APRIL, 1989

(This ain't no joke)

10am-5pm

The Show for QL users

Also: Spectrum, BBC, Einstein,
Texas TI, Dragon, ZX88,
Enterprise, MSX, Oric, Adams
and lots more.

Organised by

EMSOFT LTD

Poplar Lane, Copdock,
Ipswich, Suffolk.

0473 690729

REBEL ELECTRONICS LTD

AT LAST PERFORMANCE PRODUCTS FOR YOUR QL

RB100 — WINCHESTER DISC CONTROLLER (Price £195)

- High performance Western Digital Chipset
- Standard ST506/ST412 drive interface
- 8K byte sector buffer
- Plugs into QL expansion port or backplane
- Controls up to two physical drives

RB2000 — CONTROLLER + 20M DRIVE + PSU (Price £399)

- Ready to go system
- Elegant styling

RB50E/RB500E EXPANSION BACKPLANES (£49 or £96 EACH)

ALL PRICES INCLUDE VAT AND P&P

To order: Please fill in coupon and post to

REBEL ELECTRONICS LTD

**12 YORK PLACE,
LEEDS LS1 2DS**

or telephone

**0757 86630/
0904 708073**

PLEASE HAVE YOUR VISA CARD READY

Please send me:

RB100 ☐

RB50E ☐

Please state the quantity required

RB2000 ☐

RB500E ☐

I enclose cheque — Value £ _____

or debit Visa Card

Expiry date: _____

Signature: _____ Name: _____

Address _____

THE PRINTER REPORT III

In the third and — for now final part — of QL readers' printer experiences, we look at the Silver Reed EX30E and the popular HR-5 again.

HR-5

Of all the printer problems about which people have written to *QL World* one printer appears to stand out — the Brother HR5, although I have several other names for it.

My Brother HR5 printer was part of a bundled package when Boots, along with all the other high street retailers, were putting a printer on a QL to shift them from the shops. My package consisted of a 128K QL, Brother HR5 printer, Centronics printer interface by Connexions and *Cash Trader* software.

I bought the entire package for £200, which was incredible when you realise that at the time the printer was retailing in computer magazines at between £100 and £150. Add the cost of the software and interface and I got a standard JS QL for almost nothing.

The HR5 is in two versions, RS232 or Centronics interface, although I have never seen a serial version. Otherwise it is a dot matrix type, with standard 80-column printing. Print speed is around 30cps and the printer buffer is 1K.

Portable

The HR5 has two other features which can be very useful. One is that it can be powered by four HP-11 batteries or by its own power supply, so it is portable. Second, it can use ribbon or it can use thermal transfer paper if no ribbon is available. If no ribbon is fitted the printer goes automatically into thermal mode and vice versa. Print quality is best-described as draft quality, although there are tricks which improve the appearance of the printing. The printer is not very large. Its footprint is just less than that of A4 paper.

Some HR5s also have a paper roll holder which clips into the back of the printer. While at best described as a piece of plastic, I have seen this add-on sold in

shops for £7 or more. If you are the kind of person who uses roll paper you will need this device.

The cost of thermal paper and ribbons is high. Thermal paper for 100 sheets is £5.50 while thermal paper on the roll — 30 metres — is £5.95. It must be said that Brother thermal paper is the best available. I have used Silver-Reed EXD 10/ EXD 15, which is satisfactory for general printing purposes but it is not in the same league when compared to the dark print of Brother paper.

Ribbons

HR5 ribbons are another matter. In the last few years these things have caused more problems than anything else. For some reason they have a habit of fouling when they spool back into the case. This problem has worsened in the last six months. After repairing three separate ribbons in one afternoon I mentioned the problem to another HR5 user.

He, too, has had problems and only when we swapped ideas did we discover that the ribbon in some cartridges did not pass through a combination of spring levers. We also discovered that some ribbon cartridges had springs which appear to be assembled incorrectly. I contacted Brother about it and received a note saying it had passed on my comments.

Brother also seems a little confused over the price of printer ribbons at the moment. In its current price list they are listed at £2.45, while on mail order forms they are listed at £4.40. While some people may think that this is not a bad price it is worth pointing out that HR5 printer ribbons print only a maximum of 50,000 characters, while other Brother printers print between 80,000 and five million characters at a cost between £4.60 to £18.95. Worse still, HR5 ribbons can not be re-inked — unless somebody knows different.

Hooking up the printer is simple. Plug in the Centronics interface into SER1, put the other end in the printer. Re-set the computer, load the install program from Quill, follow the simple instructions in the

manual — which is fairly clear and straightforward — and then save the new printer...dat file. Re-set and boot Quill.

Now type a letter with a footer and place a sheet of paper in the printer. When ready, send it to the printer. This works well until you get towards the bottom of the paper and then the printer suddenly beeps telling you that you are out of paper. Yet when you take it out you find there is three inches of paper left. For some reason when Brother designed the printer it decided to fit a small microswitch which detects empty paper just inside the lip of where you feed in the paper. So then you are left with a three-inch gap at the bottom of the page and no footer.

There is a way round this. One is to use roll paper so it does not happen or get a small sticky label and stick down the switch. I have a small card flap fitted over the switch, which means I can have the best of both worlds. It is worth remembering that when using the install program for the printer drivers that the option for single sheet must be taken if you use this method.

Graphics screen dumps have in the past been the bane of my life. Try as I might I could not get a respectable screen dump. Every screen dump package worked well for two seconds, then all at once the printer would start printing a load of rubbish which usually meant a printer/computer re-set, depending on the program. In the end I wrote my own screen dump program and had it compiled. It did the job and I was pleased with the result.

Graphics

At the time I could never determine what was causing the problem. I could never use a commercial software package which used graphics modes and so felt for a long time that I was losing. I followed every guideline to setting up graphics printer drivers for programs and invented a few. I had problems with them all.

I am not the usual type of person who misses the obvious, so after a year I had all but given up. Then I got a Sandy Superdisk interface which has a Centronics interface on it. I gave it careful consideration and after cutting down one end of a 36-way Centronics lead to fit the 26-way interface, I plugged it in.

I booted Oram and then Quill and popped up the window dump in Oram. Straightaway I got a reasonable printout by sending the data straight to PAR instead of SER using the Epson FX80 option. After 10 minutes I had set up Oram to use the Brother HR4 option on scale 3. For the first time since I have had my printer I had a full, page-sized, shaded screen dump on my printer.

So where did the problem lay? The obvious answer suggests the Centronics interface. I had no complaints with it so long as it was printing text; only when graphics mode was in effect did the printer

fail. Now I am using a true Centronics interface I have no problems. I have tested this theory on a friend's system; his HR5 uses a Miracle Systems Centronics interface and he has no problems doing screen dumps. So it looks as if my interface has no graphics capabilities, which was not mentioned on the piece of card which served as a manual, not that it matters much now anyway, thanks to Sandy.

The print quality can leave a little to be desired when using programs like Quill but as with almost everything else hard or soft in the computer industry, there is a way round it. My solution is to alter the Quill printer driver in a slightly different way than the usual option of using the translate option.

Automatic

The HR5 does not need pre-amble or post-amble codes, so I found that those options could be used to send code to the computer automatically during printing without having any messy extra characters

turns Elite mode on at the start of every page.

POSTAMBLE CODE DC2: This turns it off and sets the print back to normal.

There are two problems with this method and two worthwhile gains. The problems are that bold cannot be used as it prints in normal print and makes the document look unbalanced, due to the two different styles. So watch those headers and footers. Second, using Quill with the margins set wider than the screen can make it difficult to use. So I use the default margins and when I have finished I re-justify the right margin to 8.5in. This takes only a moment or so and is easier than trying to remember what is off-screen.

The advantages are better print quality than the normal print mode. If you use a very good, shiny-type paper, the print quality on first examination could be (V) NLQ, the 'V' meaning 'Very'. The second advantage is that you get more text on one line. This means what text which might

'GOTO'. This can save miles of ribbon when printing labels.

So far I have found just one problem with using the HR5 with the Sandy Centronics interface and that is probably software-related. When printing, the information is passed into a RAM buffer so that the computer can continue with its job(s); this speeds printing but you can find yourself with the problem of the printer waiting for data from a half-filled buffer. It is not really the fault of the printer: it is the buffers as it is waiting to be 'topped up'. The way round this is to send a few carriage returns to help it if you get this problem.

Price at the moment is difficult. The machine is now discontinued, although Brother still supplies ribbons and thermal paper if you cannot get them in high street shops or the office suppliers.

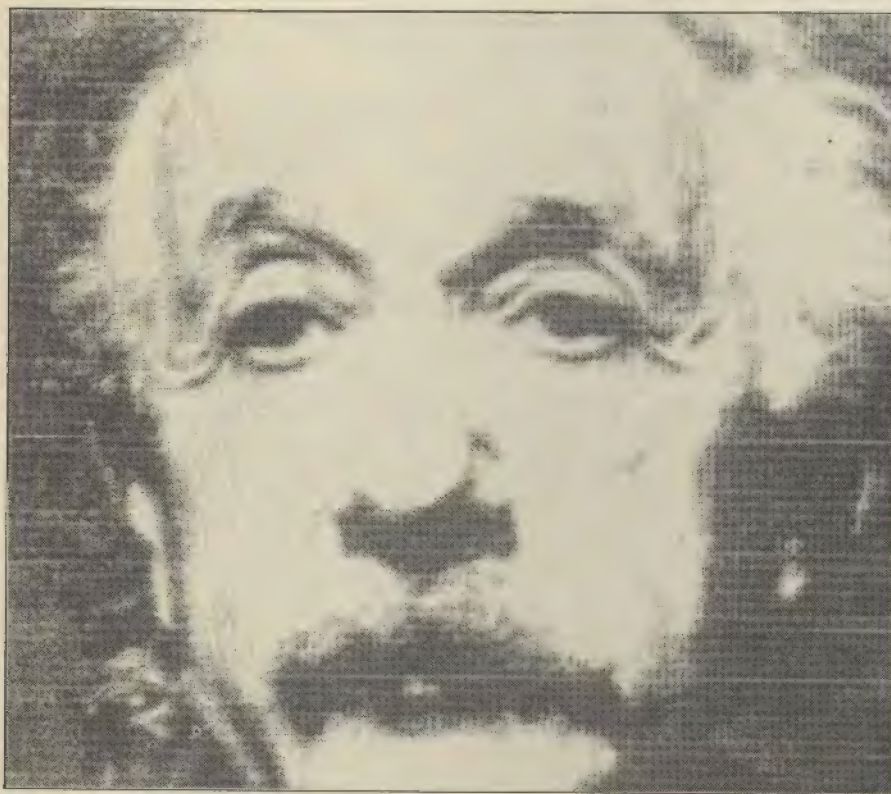
The power supply is extra, at between £2.50 and £9.95 each. No doubt you could use a multi-voltage transformer if you have one spare. If you do not have a Centronics port in your disc interface you will also have the extra expense of a Centronics interface. I would recommend the Miracle Systems one which is less than £20 and can handle graphics modes.

Buy new

If you want one of these printers second-hand, be prepared for a shock. You will often see these printers for sale in the classified advertisements, yet the owner will often want more for it than it would now cost to buy new. It is cheaper to buy a new one than argue on the telephone about nearest offers.

After two years of a love/hate relationship, I think I have it beaten. It is not perfect by any means. I think everybody would like a full-blown NLQ printer with the speed of a laser. It now prints everything I have thrown at it with no complaints. It is versatile, as it can handle two types of paper. It is portable, as it has two forms of power supply. It is not very big or heavy. It is very handy for anybody who wants a printer for basic file/listing/screen dumping. So long as Brother supplies ribbons and the excellent thermal paper I doubt if there is a better all-round printer at the price.

Wayne Fletcher



on-screen as some people seem to do. The best output on the HR5 is the Elite typeface which gives 96 columns on paper, so the margins on Quill have to be altered before printing to say one-inch (left) and 8.5in. (right), with indent wherever you want. I suggest that you also feed the paper slightly more to the left than you would normally do.

When altering the printer driver in Install, find the option which says preambles and enter:

PREAMBLE CODE ESC,'M: This

take 1.25 pages when re-justified might well fit on a single sheet. This can reduce the cost of both ribbon and thermal paper.

One other tip to remember might well apply to other printers. The first time the HR5 is used and you have ribbon installed the machine does a complete one-line spool of the ribbon. This is wasteful when you are using the printer a great deal, so do not turn it off during the session unless you have to do so. If you are working in Basic and you are using the printer, avoid the 'RUN' command, as this causes a line spool of ribbon as well. Instead, use

Information:

(Brother Head Office)
Jones+Brother, Shepley Street,
Audenshaw, Manchester
M334 5JD.
Tel: 061 330 6531.
(HR5 Suppliers)
EEC Ltd.
18-21 Misbourne House, Chiltern
Hill,
Chalfont St. Peter,
Bucks SL9 9UE.
Tel: 0753 888866.

SILVER REED EX30E

The printer I use is a Silver Reed EX30E. It is an electronic typewriter/printer with a cassette daisywheel print element and a 12in. wide carriage, with the option of connecting to a computer, but can be used on its own as a portable machine if required. That is one of the reasons I bought it, the other reason being the price and the fact that I could get letter quality printout. I have used it almost daily in the last two years and have been very pleased with the all-round performance.

I obtained the machine from an Argos branch in Chester. The original price was something in the region of £320 but it was on offer at £185. The day I bought it it had been reduced by a further £5, so I paid £180.

Silver Reed no longer manufactures the EX30E. It has been replaced by the Silver Reed EZ30. I know, however, that Silver Reed is making a special offer on the last of the EX30E models it has in stock which will include in the price the IF30 parallel interface. I paid £98 for the interface on its own, as well as £20 for the Centronics printer interface, dual port version.

That made a total price to me of £298 and I admit that the £98 for the IF30 interface was something of a surprise at the time, as I had been informed by another source that the machine would work only with the Centronics interface which, as it transpires, it would not.

Interfaces

Connecting to the QL, once I had obtained the required interfaces, was a piece of cake. With everything switched off, I first plugged the output pins of the Centronics interface into the input end of the IP30 parallel interface; then, removing the small cover on the connector port of the typewriter, which is situated on the lower right-hand side of the typewriter lower cover I plugged in the flying output lead of the IF30 parallel interface. Finally, I put the input lead from the Centronics interface into SER1 on the QL. Less than 20 minutes after receiving the machine I had my first hard copy.

Silver Reed supplies a very good operating manual with the machine; you also get a very comprehensive operating manual with the IF30 parallel interface containing a full list of installation codes, ASCII codes and so on. If you wish to use the ASCII codes you will need an ASCII wheel for the machine. I have been using the wheel supplied with the typewriter/printer, typestyle (standard) Courier, printing pitch 10P — 10 characters per inch.

The machine has three settings of pitch, 10, 12, 15; the wheel I have is 10-pitch. To use the other settings of 12 and 15 you need the other pitch of wheel supplied by the manufacturer or agent. The wheel I have at the moment does all I seem to need and I have had no adverse effects from any of my other equipment.

Installation of the printer drivers was simple. As I use Quill a great deal, I used the Lrun MDV1__Install__bas to set up the system. Once I had installed the name Silver Reed I then put in the preamble code — ESC, " @, ESC, " R, " 3 followed by Translate 1 code: " £, ESC, " R, ETX, " #, ESC, " R, NUL.

With regard to after-sales support, Silver Reed could not have been more helpful. Its nearest agent to me is at Llandudno, where I obtain my ribbons and spares like the different styles of wheel, if required. I am still using the 10-pitch wheel supplied with the machine and have up to now had no problems with it. There are two types of ribbon I can use; both are of the cassette type, one type being carbon which is used only once through the printer. It costs £3 per cassette, so if you do a good deal of printing you can easily get through one in no time. This, of course, can become expensive. The Silver Reed agent told me about the fabric ribbon which costs more but lasts much longer; it costs £8.40. The one I am using at present has been in the printer for about two months and is still performing well. I hope that when it finally runs out that I will be able to get it re-inked for about £2.

Paper for the printer is obtained from various sources, one being the printer which prints the local weekly paper. It usually has waste edges about 10 or 11in. wide, plus other bits and bobs, I have been able to get a large amount for £2.

Coloured

I also bought three lots of different-coloured A4-size paper; each pack had 500 sheets, total cost £15. The printer can also use the computer-style perforated edge paper; even though it has no carrier for this type of paper, it still works satisfactorily. At least, I have experienced no problems with it.

I must say that I am very pleased with the Silver Reed typewriter/printer and for the work I require it to do, to write letters and documents, I could not ask for a better machine.

There are some snags to having a daisy-wheel printer. It is good for letters but you can only do just that. You cannot, for instance, print graphs or get a screen-

dump. You can change the print style only by changing the printwheel, so you are limited to what you can do. If, as in my case, you need letter quality printing, in my opinion you can get nothing better than a daisywheel. To get the same quality of print from a dot matrix printer you will have to pay a good deal more.

No hash

In my case, although I have the hash sign on the printwheel and on the typewriter key, I cannot get the hash sign to print-out. I have tried various Translate codes to no avail. If I try to print-out the Dir from the screen, it will print satisfactorily but the problem is that it prints on the diagonal:

```
145/213 sectors
Jerzy__add
Sidney__add
Don__add
Mike__add.
```

and so on. I have seen this in *QL World* but I have seen no reply to the person who asked about it.

Recently I have bought a Star LC10 eight-colour dot matrix printer but, having had it for only a short time, I feel that I cannot make any comment on it. I use the Star LC10 in SER1 and the daisywheel in SER2. I have had to make program changes to the printer drivers. I have made two copies of Quill, one to output to SER1, one to output to SER2. It seems to work satisfactorily.

In a word processor, I started using the standard Quill 2.0, I then progressed to the 2.3 and now have a 2.35 version. Both the 2.3 and the 2.35 are Turbo versions. I think with Turbo and Qtype added, you cannot go far wrong. I found Quill fairly easy to use from the start and think it is the ideal word processor for a new user of the QL. It is also easy to add the printer codes.

A short time ago I upgraded most of my hardware. I now have 'Trump Card' plus twin NEC drives and the new Star LC10. With the added memory and disc drives, I really expect something good from the LC10 printer. Time will tell.

At the moment, if I have any spare time. I am trying to get to grips with *Desktop Publisher Extra*, which I am sure will be the program to use on the LC10. As I run the Club QL and we are hoping to issue our own newsletter in the near future, I think DTPE will be of great value.

W. G. Johns

THE

P + R : O = G < S

If you have a program worthy of consideration, send it to 'The Progs',
Sinclair QL World, Greencoat House, Francis Street, London SW1P 1DG.
We pay for everything published at the usual page rates.

Program of the month

THE BUSINESS GAME by DAVID SMITH

The Business Program is a business simulator for any number of players, human or computer. When playing, each player has control of a small company in direct competition with everyone else, as everyone makes the same goods. To win you must find the most profitable combination of quantity of manufacture, selling price and advertising. The winner is obviously the one who makes most money by the end of the game.

At the start you will be asked how many are to play — do not forget to include any computer players; how many turns the game will last — start with a six-month game to get the feel of it; the computer skill level — start at two and work up slowly; and, finally, the names of all the players. To signify a computer player, start its name with the letters "QL".

Now the game starts. Each player in turn will be presented with two sets of information. The first screen is general information, which everyone receives. It tells you the state of the entire market and from that such things as average advertising and average prices can be calculated. Also future market trends will be given.

Note that the information you receive is for the previous month, so the short-term forecast concerns the turn you are about to play and the long-term forecast is about the one after.

At any time in your attempt you can call up relevant help by pressing "h", even when inputting numbers.

After pressing any key, make sure that no-one else can see the information displayed. That is the information about how your company fared in the previous month and therefore contains sensitive information. Do not worry too much about stock remaining — you can always sell it later.

There are certain rules governing what you can input. The amount made can vary by only up to five units either way over the previous month. That is why forecasts are so important; it is very easy to find yourself struggling as you are either under- or over-producing. When thinking about what you will make, concentrate on potential sales rather than total sales, as that is what tells you your market share.

Your selling price cannot increase by more than £70; it can fall by any amount. Advertising expenditure can be increased only by up to £30; again it can be reduced by any amount but you would be foolish to do so. When calculating your selling price, each unit costs £60 to make and your overheads equal £300, plus your advertising expenditure — under non-production costs.

One final piece of advice; it can be more profitable to accept fewer sales at a higher selling price than to try con-

stantly to undercut your competitors but this depends heavily on market conditions.

Program notes

The heart of the game is the procedure called CALC which is what works out how each company fares each month. I chose the current system of calculating two different market shares and then adding them in different proportions to determine the final potential sales.

The computer decides before the game starts how many people will be prepared to buy — array PPTB — the goods each month and then works from these. First, it divides the market in proportion to advertising expenditure.

It then allocates each player an equal share and adds to or subtracts from that an answer from an inverse x cubed graph with the average price at the origin, with the player's price providing the input.

These two calculations are then added in a ratio dependent on the variable 'tuning'. This variable can be altered while the game is running by pressing CTRL-SHIFT-A on the general data screen; the higher the decimal, the greater the significance of advertising.

When I was writing the program I was also experimenting with QLAN and the possibili-

ties of multi-player, multi-computer games. Therefore the program will detect automatically any QLs or ZX Spectrums with Interface Ones running the correct software on the net and tie into the main game any players on those machines.

That has the advantage of making confidential company information much more secure and also it is great fun.

When running the slave program(s) — one QL has the Master program, i.e., the one listed, and all other computers have Slave programs — make sure that they are displaying the 'Logging on' message before the last person on the Master has input his name.

Slave

The QL Slave is a modification of the Master; alterations necessary are listed. Do not panic — it is not so much work as it looks. For the Spectrum Slave send me a cartridge or tape — you need an Interface One or compatible — and I will give you a copy. I have read reports that early QLs could not network properly, hence there is no charge for the Spectrum Slave except for postage costs. I use a JS machine and have had no problems. All I can say is try it and see; if it works you will discover a new aspect of you QL.

```

100 tuning=3/8
110 REMARK
120 REMARK
130 REMARK
140 REMARK THE BUSINESS PROG
RAM
150 REMARK FOR THE SINCLAIR
QL
160 REMARK AND SINCLAIR ZX SPE
CTRUM
170 REMARK OVER THE EX NE
T
180 REMARK AND QLAN
190 REMARK DAVID SMITH 1
987
200 REMARK
210 REMARK
220 PAPER 0:WINDOW 512,256,0,0
:CLS
230 BEEP 2000,20,1,1,1,1,1,1
240 WINDOW £2,224,200,32,16
250 WINDOW £1,224,200,258,16
260 WINDOW £0,450,36,32,216
270 OPEN £15,£224x108x32x10
8,128
280 PAPER £15,7:INK £15,0:PAPE
R £2,7:INK £2,0
290 MODE 4
300 FOR N=0 TO 2:BORDER £N,2,7
,0
310 REPEAT GAME_LOOP
320 INSTRUCT
330 INITIATE
340 CLS£2
350 PLAY_GAME
360 DEFINE PROCEDURE INITIATE
370 CLS:CLS£2
380 PRINT £2,"Please tell me
how many players there wi
ll be. (2 or more.):":inp 2,3,0
,nop1
390 IF nop1<2 THEN GO TO 370
400 AT £2,4,0:PRINT £2,"Each
turn represents one month. Ho
w many turns shall we play?":
AT £2,6,0:PRINT FILL$( ' ',36)
:inp 2,6,0,months

f1p1_BUSINESS 1961 Jul 14 22:5
9:56 Fri

410 IF months < 1 THEN GO TO
400
420 AT £2,7,0:PRINT £2,"Plea
se tell me how hard you want
me to play.(set my skill level
1-20)":AT £2,9,0:PRINT £2,FILL
$( ' ',36):inp 2,9,0,DIFF_LEVEL
:ASDF=0
430 IF DIFF_LEVEL < 1 THEN G
O TO 420
440 DIM PNUMS(DIM ACCOUNT(nop
1,10),MONTH_DATA(5),PPTB(mont
h),ADVERT(months*6)
500 FOR ADPOINT=0 TO 5:ADVER
T(ADPOINT)=RND(50 TO 100)*nop1
510 ADPOINT=6
520 ADVERT(6)=50*nop1
530 FOR N=1 TO nop1
540 RESTORE 580:FOR M=1 TO
10
550 READ ACCOUNT(N,M)
560 END FOR M
570 END FOR N
580 DATA 20,20,0,120,20,2400
,1200,350,850,850
590 RESTORE 530
600 FOR N=1 TO 5
610 READ MONTH_DATA(N)
620 END FOR N
630 DATA 20*nop1,20*nop1,0,n
op1*2400,50*nop1
640 PPTB(0)=20*nop1
650 FOR N=1 TO months
660 PPTB(N)=PPTB(N-1)+RND(
-(nop1*4) TO (nop1*4))+RND(nop
1*2)
670 END FOR N
680 SEND_THE_DATA

f1p1_BUSINESS 1961 Jul 14 23:0
1:12 Fri

690 END DEFINE INITIATE
700 DEFINE PROCEDURE PLAY_GAME
710 FOR MONTH_NO=1 TO months
720 FOR N=1 TO nop1:IF PNUM
$(N,1 TO 4)=="EXT." THEN BRODCA
ST:END IF :END FOR N

730 FOR PNUM=1 TO nop1
740 IF PNUMS(PNUM,1 TO 2)
=="QL" THEN CLS: AT 0,0:PRINT P
NUMS(PNUM)!"IS":"THINKING..."
:QL_PLAY:GO TO 790
750 IF PNUMS(PNUM,1 TO 4)
=="EXT." THEN CLS:PRINT "ACCES
SING"!"PNUMS(PNUM):OTHER_PLAY:
GO TO 790
760 DISPLAY
770 INPUT_DATA
780 PRINT £0:"PRESS ANY
KEY":A=KEYROW(1):PAUSE:CLS£0:C
LS
790 END FOR PNUM
800 CALC
810 END FOR MONTH_NO
820 MONTH_NO=MONTH_NO+1
830 FOR PNUM=1 TO nop1
840 IF NOT (PNUMS(PNUM,1 TO
2)=="q1" OR PNUMS(PNUM,1 TO
4)=="EXT.") THEN DISPLAY:PRINT
£0:"Press any key":A=KEYROW(0
):PAUSE:CLS£0
850 NEXT PNUM
860 THE_END
870 END DEFINE
880 DEFINE PROCEDURE CALC
890 CLS
900 ADPOINT=ADPOINT+1
910 AT 9,9
920 PRINT "PLEASE WAIT"
930 TOTAD=0
940 FOR N=1 TO nop1
950 TOTAD=TOTAD+ACCOUNT(N,
8)-300
960 END FOR N:AVAD=TOTAD/nop
1
970 TOTPR=0
980 FOR N=1 TO nop1

f1p1_BUSINESS 1961 Jul 14 23:0
2:26 Fri

990 TOTPR=TOTPR+ACCOUNT(N,
4)
1000 END FOR N:AVPR=TOTPR/nop
1
1010 FOR QW=1 TO nop1
1020 p1=(PPTB(MONTH_NO)/nop
1)*(ACCOUNT(QW,8)-300)/AVAD
1030 p2=(PPTB(MONTH_NO)/nop
1)*(PPTB(MONTH_NO)/nop1)*((-
ACCOUNT(QW,4)-AVPR)/3)/50000)
1040 ACCOUNT(QW,1)=(p1*tun
ing)+(p2*(1-tuning))
1050 END FOR QW
1060 T=0:FOR N=1 TO nop1:T=T
+ACCOUNT(N,1)
1070 IF T>PPTB(MONTH_NO) THE
N
1080 AS=INT((T-PPTB(MONTH_
NO))/2+.5):FOR N=1 TO nop1:ACC
OUNT(N,1)=ACCOUNT(N,1)-AS
1090 END IF
1100 Repeat CHECK
1110 SH=0:C=0:FOR N=1 TO n
op1
1120 IF ACCOUNT(N,1)<0 T
HEN SH=SH-ACCOUNT(N,1):ACCOUNT
(N,1)=0:C=C+1
1130 END FOR N
1140 IF C<nop1 THEN
1150 SH=SH/(nop1-C):FOR N=
1 TO nop1
1160 IF ACCOUNT(N,1)>0 T
HEN ACCOUNT(N,1)=ACCOUNT(N,1)-
SH
1170 END FOR N
1180 END IF
1190 IF C=0 THEN EXIT CHEC
K
1200 END Repeat CHECK
1210 FOR N=1 TO nop1:ACCOUNT
(N,1)=INT(ACCOUNT(N,1)+.5)
1220 FOR N=1 TO nop1
1230 PS=ACCOUNT(N,1)
1240 SFS=ACCOUNT(N,5)+ACCO
UNT(N,3)
1250 IF PS<=SFS THEN
1260 ACCOUNT(N,2)=PS:ACC
OUNT(N,3)=SFS-PS

f1p1_BUSINESS 1961 Jul 14 23:0
3:44 Fri

1270 ELSE ACCOUNT(N,2)=S
FS:ACCOUNT(N,3)=0
1280 END IF
1290 END FOR N
1300 DIM MONTH_DATA(5)
1310 FOR N=1 TO nop1
1320 MONTH_DATA(1)=MONTH_D
ATA(1)+ACCOUNT(N,2)
1330 MONTH_DATA(3)=MONTH_D
ATA(3)+ACCOUNT(N,3)
1340 MONTH_DATA(4)=MONTH_D
ATA(4)+ACCOUNT(N,2)*ACCOUNT(N,
4)
1350 MONTH_DATA(5)=MONTH_D
ATA(5)+ACCOUNT(N,8)-300
1360 END FOR N
1370 ADVERT(ADPOINT)=MONTH_D
ATA(5)
1380 MONTH_DATA(2)=PPTB(MONTH
_NO)
1390 FOR N=1 TO nop1
1400 ACCOUNT(N,6)=ACCOUNT(
N,2)*ACCOUNT(N,4)
1410 ACCOUNT(N,7)=60*ACCOU
NT(N,5)
1420 COSTS=ACCOUNT(N,8)+AC
COUNT(N,7)
1430 SALES=ACCOUNT(N,6)
1440 ACCOUNT(N,9)=SALES-CO
STS
1450 ACCOUNT(N,10)=ACCOUNT
(N,10)+SALES-COSTS
1460 END FOR N
1470 CLS
1480 END DEFINE CALC
1490 DEFINE PROCEDURE DISPLAY
1500 CLS
1510 AT 0,14:PRINT "MONTH:"
MONTH_NO-1
1520 Z=LEN(PNUMS(PNUM))
1530 Z=Z/2+1:AT 1,14-Z:PRINT "
PLAYER:"PNUMS(PNUM):RESTORE
1610
1540 AT 3,0:PRINT '
PREVIOUS MONTH'
1550 FOR N=1 TO 5
1560 READ AS:AT N*2-2,20-L
EN (AS)

f1p1_BUSINESS 1961 Jul 14 23:0
4:59 Fri

1570 PRINT AS
1580 AT N*2+2,30-LEN(MONTH
_DATA(N))
1590 PRINT MONTH_DATA(N)
1600 END FOR N
1610 DATA 'TOTAL SALES','POT
ENTIAL SALES','STOCK LEFT','PR
ICE OF SALES','ADVERTISEMENT
S'
1620 AT 13,0
1630 IF MONTH_NO>months THEN
GO TO 1680
1640 PRINT "SHORT TERM:"mon
per$(PPTB(MONTH_NO-1),PPTB(MO
NTH_NO))
1650 IF MONTH_NO<months THEN
PRINT "LONG TERM:"monper$(P
PTB(MONTH_NO),PPTB(MONTH_NO+1
))
1660 IF MONTH_NO=months THEN
PRINT "LONG TERM:NO FORECAST
AVAILABLE"
1670 PRINT under_cuts(PNUM)
1680 CLS £0:PRINT£0,MID$( 'PR
ICES ANY KEY TO CONTINUE OR 'H'
FOR HELP."):A=KEYROW(0):AS=IN
KEY$( -1):CLS £0
1690 IF AS=="I" THEN INPUT £0
,"TUNING FOR ADS ? (DECIMAL.NO
T FRACTION)":tuning:CLS£0
1700 IF AS=="H" THEN help1
1710 FOR X=2 TO 18:AT X,0:PR
INT FILL$( " ",36):BEEP 10,X:EN
D FOR X
1720 AT 0,20:PRINT MONTH_NO
1730 RESTORE 1780
1740 FOR N=1 TO 10
1750 READ AS
1760 AT N+5,23-LEN (AS):PR
INT AS:AT N+5,30-LEN(ACCOUNT(P
NUM,N)):PRINT ACCOUNT(PNUM,N)
1770 END FOR N
1780 DATA 'POTENTIAL SALES',
'TOTAL SALES','STOCK LEFT','PR
ODUCT PRICE','AMOUNT PRODUCE
D','INCOME','PRODUCTION COST
S','NON-PRODUCTION COSTS','
PROFIT','AMOUNT IN THE ACCO
UNT'
1790 CLS £0:PRINT £0,MID$( "Pr
ices any key, or 'H' for help."
):AS=INKEY$( -1):CLS £0:CSIZE £
0,0,0:IF AS=="H" THEN help2
1800 END DEFINE DISPLAY
1810 DEFINE PROCEDURE THE_END
1820 CLS
1830 AT 1,11:PRINT "THE END"
1840 PRINT
1850 DIM POSS(nop1,40)
1860 HIPL=1:HI=-(10*600)
1870 FOR N=1 TO nop1

1880 PRINT N:'.':
1890 FOR M=1 TO nop1
1900 IF ACCOUNT(M,10)>HI
THEN HI=ACCOUNT(M,10):HIPL=M
1910 END FOR M
1920 POSS(N)=PNUMS(HIPL)&
" WITH "&ACCOUNT(HIPL,10)
1930 PRINT "PNUMS(HIPL):"
WITH":"&ACCOUNT(HIPL,10):ACC
OUNT(HIPL,10)=-((10*600):HI=-(1
0*600))
1940 END FOR N
1950 EXPORT
1960 INPUT £0,"ANOTHER GAME
? (Y/N)":ANS
1970 IF ANS=="N" THEN STOP:E
LSE RUN
1980 END DEFINE THE_END
1990 DEFINE PROCEDURE BROADCAST
2000 STN=PNUMS(N,5 TO)
2010 OPEN £4,"NETO","STN
2020 FOR X=1 TO 5:SEND MONTH
_DATA(X),STN
2030 SEND PPTB(MONTH_NO),STN
:SEND nop1,STN
2040 X=PLPERST(STN,3)
2050 POS='\'INSTR PNUMS(N)+
1:X=X-(PNUMS(N,POS TO)-1)
2060 FOR Z=1 TO 10:SEND ACCO
UNT(X,Z),STN
2070 SEND monper$(PPTB(MONTH
_NO-1),PPTB(MONTH_NO)),STN
2080 IF MONTH_NO=months THEN
SEND "NO FORECAST",STN:ELSE S
END monper$(PPTB(MONTH_NO),PPT
B(MONTH_NO+1)),STN

f1p1_BUSINESS 1961 Jul 14 23:0
7:42 Fri

2090 CLOSE £4
2100 END DEFINE BROADCAST
2110 DEFINE PROCEDURE SEND (XY
Z$,ABC)
2120 IF PLPERST(ABC,2)=2 THE
N PRINT £4:XYZ$:CHR$(13):ELSE
PRINT £4:XYZ$
2130 END DEFINE SEND
2140 DEFINE PROCEDURE OTHER_PL
AY
2150 STN=PNUMS(PNUM,5 TO)
2160 OPEN £4,"NETI","STN
2170 POS='\'INSTR PNUMS(PNU
M)+1:POS=PNUMS(PNUM,POS TO)
2180 AC=PLPERST(STN,3)+POS-1
2190 INPUT £4,ACCOUNT(AC,5)
2200 INPUT £4,ACCOUNT(AC,4)
2210 INPUT £4,ACCOUNT(AC,8)
2220 CLOSE £4
2230 END DEFINE OTHER_PLAY
2240 DEFINE FUNCTION monper$(
MON1,MON2)
2250 LOCAL A,B
2260 A=MON1/MON2*100
2270 B=100-A:B=INT(B+.5)
2280 AS="SALES WILL"
2290 IF B>0 THEN AS=AS&" IN
CREASE "ELSE AS=AS&" DECREASE
"
2300 AS=AS&"BY UP TO "&ABS(B
)&"%"
2310 RETURN AS:END DEFINE monp
er
2320 DEFINE FUNCTION XPOFY(X,Y
)
2330 A=Y**X/100
2340 B=INT(A+.5):RETURN B
2350 END DEFINE XPOFY
2360 DEFINE FUNCTION FXOXY(X,Y
)
2370 A=X/Y*100
2380 B=INT(A+.5)
2390 RETURN B
2400 END DEFINE FXOXY
2410 DEFINE PROCEDURE QL_PLAY
2420 DIM PHO(nop1,3)
2430 HIGHPROF=-(10*50)

f1p1_BUSINESS 1961 Jul 14 23:0
8:56 Fri

2440 FOR N=1 TO nop1
2450 IF RND <.5 THEN PHO(N
,1)=TREND:ELSE PHO(N,1)=NON_TR
END
2460 PHO(N,2)=(MONTH_DATA(
4)/MONTH_DATA(1))+RND(-10 TO 1
0)
2470 END FOR N
2480 FOR Nmbb=1 TO DIFF_LEVE
L
2490 PRICE=(MONTH_DATA(4)-
(ACCOUNT(PNUM,2)*ACCOUNT(PNUM,
4)))/(MONTH_DATA(1)-ACCOUNT(PN
UM,2))
2500 PRICE=PRICE+RND(-10 T
O 10)

```

```

2510 IF RND<.5 THEN ADS=TR
END:ELSE ADS=NON_TREND
2520 IF ADS=(ACCOUNT(PNUM,
8)-300)>30 THEN ADS=ACCOUNT(PN
UM,8)-30-300
2530 PHO(nopl,1)=ADS
2540 PHO(nopl,2)=PRICE
2550 PHOCALC
2560 CHANGE=PHO(nopl,3)-AC
COUNT(PNUM,3)-ACCOUNT(PNUM,5)
2570 IF CHANGE<-5 THEN CHA
NGE=-5
2580 IF CHANGE>5 THEN CHAN
GE=5
2590 COSTS=(ACCOUNT(PNUM,5)
)-CHANGE)*60+ADS+300
2600 INCOME=(ACCOUNT(PNUM,
5)+CHANGE)*PRICE
2610 PROFIT=INCOME-COSTS
2620 IF PROFIT>HIGHPROF TH
EN
2630 DIM STO(3)
2640 STO(1)=ADS:STO(2)=P
RICE
2650 STO(3)=ACCOUNT(PNUM
,5)+CHANGE
2660 END IF
2670 END FOR Nmbb
2680 ACCOUNT(PNUM,5)=INT(STO
(3)*.5)
2690 ACCOUNT(PNUM,8)=INT(STO
(1)/300+.5)

```

```

f1p1_BUSINESS 1961 Jul 14 23:1
0:12 Fri

```

```

2700 ACCOUNT(PNUM,4)=INT(STO
(2)*.5)
2710 END Define QL_PLAY
2720 Define Function NON_TREND
2730 HI=0:LO=10:100
2740 FOR I=1 TO nopl
2750 IF I=PNUM THEN NEXT I
2760 IF ACCOUNT(I,8)-300 <
LO THEN LO=ACCOUNT(I,8)-300
2770 IF ACCOUNT(I,8)-300 >
HI THEN HI=ACCOUNT(I,8)-300
2780 END FOR I
2790 AS=(HI+LO)/2:bc=HI-AS:A
S=HI-(bc/DIFF_LEVEL)
2800 RETURN RND(AS TO HI)*RN
D(50)
2810 END Define NON_TREND
2820 :
2830 Define Function TREND
2840 TOT=0
2850 FOR I=1 TO ADPOINT
2860 TOT=TOT+ADVERT(I)
2870 END FOR I
2880 I=TOT/ADPOINT/nopl*RND(
50)
2890 IF I<0 THEN I=RND(50 TO
150)
2900 RETURN I
2910 END Define TREND
2920 :
2930 Define Procedure PHOCALC
2940 LOCAL N:TOTAD=0:TOTPR=0
2950 FOR N=1 TO nopl
2960 TOTAD=TOTAD+PHO(N,1):
TOTPR=TOTPR+PHO(N,2)
2970 END FOR N
2980 FOR N=1 TO nopl
2990 p1=(PFTB(MONTH_NO)/no
pl)*PHO(N,1)/TOTAD*nopl
3000 p2=(PFTB(MONTH_NO)/no
pl)*(PFTB(MONTH_NO)/nopl*((
PHO(N,2)-(TOTPR/nopl)/3)/5400
0))
3010 PHO(N,3)=(p1*tuning)+
(p2*(1-tuning))

```

```

f1p1_BUSINESS 1961 Jul 14 23:1
1:25 Fri

```

```

3020 END FOR N
3030 END Define PHOCALC
3040 Define Procedure GET
3050 DIM PLPERST(63,3):REMARK
NOFL,TYPE,BASE
3060 STN=2
3070 OPEN #4,NETI_1
3080 Repeat LOOP
3090 IF EOF (#4) THEN EXIT
LOOP
3100 N$=INKEY$(#4)
3110 IF N$="" THEN EXIT LO
OP
3120 DUM=N$ INSTR 'QS':D
UM=DUM-1
3130 IF DUM=0 THEN EXIT LO
OP
3140 OPEN #5,NETO_1
3150 IF DUM=2 THEN PRINT #
5,STN:CHR$(13):montha:CHR$(13)
:ELSE PRINT #5,STN:PRINT #5,m
ontha

```

```

3160 CLOSE #5
3170 OPEN #5,'NETI_1&STN
3180 INPUT #5,PLPERST(STN,
1):PLPERST(STN,2)=DUM
3190 CLOSE #5
3200 STN=STN-1
3210 IF STN=64 THEN EXIT L
OOP
3220 END Repeat LOOP
3230 CLOSE #4
3240 END Define GET
3250 Define Procedure COL_NAME
S
3260 DIM DUM$(nopl,36)
3270 FOR NHY=1 TO nopl:DUM$(
NHY)=PNAMES(NHY)
3280 COUNT=0:FOR N=2 TO 63:C
OUNT=COUNT+PLPERST(N,1)
3290 DIM PNAME$(nopl-COUNT,3
6)
3300 FOR N=1 TO nopl:PNAMES
(N)=DUM$(N)
3310 N=N-1
3320 FOR Q=2 TO 63
3330 IF PLPERST(Q,1)=0 THE
N EXIT Q

```

```

f1p1_BUSINESS 1961 Jul 14 23:1
2:41 Fri

```

```

3340 OPEN #5,'NETI_1&Q
3350 FOR W=1 TO PLPERST(Q,
1)
3360 INPUT #5,NAM$
3370 FOR QAZ=LEN(NAM$) T
O 2 STEP -1:IF NAM$(QAZ)=' ' T
HEN NAM$=NAM$(1 TO QAZ):ELSE E
XIT QAZ:END IF :END FOR QAZ
3380 PNAMES(N)='EXT.'&QR
'\&W$':&NAM$
3390 N=N+1
3400 END FOR W
3410 END FOR Q
3420 PLPERST(2,3)=nopl-1
3430 FOR Q=3 TO 63
3440 IF PLPERST(Q,1)>0 THE
N PLPERST(Q,3)=PLPERST(Q-1,1)+
PLPERST(Q-1,3)
3450 END FOR Q
3460 nopl=nopl-COUNT
3470 END Define
3480 Define Procedure EXPORT
3490 LOCAL N
3500 FOR N=2 TO 63
3510 IF PLPERST(N,1)=0 THE
N EXIT N
3520 OPEN #4,'NETO_1&N
3530 FOR Q=1 TO nopl:SEND
POS$(Q,N)
3540 CLOSE #4
3550 END FOR N
3560 END Define
3570 Define Procedure Inp (cha
n,X,Y,variable)
3580 LOCAL A$,B$
3590 B$='':AT #chan,X,Y:PRIN
T #chan,'_'
3600 Repeat LOOP
3610 A$=INKEY$(-1)
3620 mkl=CODE (A$)
3630 SELECT ON mkl
3640 =10:IF B$<>' ' THEN
EXIT LOOP
3650 =194:IF B$<>' ' THEN
B$=B$(1 TO LEN(B$)-1)
3660 =48 TO 57:IF LEN (B
$)<10 THEN B$=B$&A$
3670 =72,104:IF X MOD 4=
0 THEN help2

```

```

f1p1_BUSINESS 1961 Jul 14 23:1
3:58 Fri

```

```

3680 END Select
3690 AT #chan,X,Y
3700 PRINT #chan,B$:'_'
3710 END Repeat LOOP
3720 variable=B$
3730 AT #chan,X,Y:PRINT #cha
n,B$:' '
3740 END Define
3750 Define Procedure INP$ (ch
an,X,Y,LENGTH,VAR$)
3760 LOCAL A$,B$
3770 B$='':AT #chan,X,Y:PRIN
T #chan,'_'
3780 Repeat LOOP
3790 A$=INKEY$(-1)
3800 mkl=CODE (A$)
3810 SELECT ON mkl
3820 =10:IF B$<>' ' THEN
EXIT LOOP
3830 =194:IF B$<>' ' THEN
B$=B$(1 TO LEN(B$)-1)
3840 =REMAINDER :IF LEN(
B$)<LENGTH THEN B$=B$&A$

```

```

3850 END Select
3860 AT #chan,X,Y
3870 PRINT #chan,B$:'_'
3880 END Repeat LOOP
3890 VAR$=B$
3900 AT#chan,X,Y:PRINT #chan
,B$:' '
3910 END Define
3920 Define Procedure SEND_THE
_DATA
3930 POINTER=2
3940 Repeat LOOP
3950 IF PLPERST(POINTER,1)
=0 OR POINTER>63 THEN EXIT LOO
P
3960 OPEN #4,'NETO_1&POINT
ER
3970 FOR N=0 TO montha:SEN
D PFTB(N),POINTER
3980 FOR N=0 TO montha+6:S
END ADVERT(N),POINTER
3990 POINTER=POINTER+1
4000 CLOSE #4
4010 END Repeat LOOP
4020 END Define

```

```

f1p1_BUSINESS 1961 Jul 14 23:1
5:14 Fri

```

```

4030 Define Procedure INSTRUCT
4040 INPUT #0,'Instructions
? (Y/N) >':ANS=ANS&ANS$N':CLS
#0:IF AN$(1)='n' THEN RETURN
4050 _DATA ' The Busi
ness Game
4060 _DATA ''
4070 _DATA ''
4080 _DATA 'This game puts yo
u in charge of a',young compa
ny in direct combat with',man
y other companies vying for th
e',same customers.As in real
business,',the secret of succ
ess is to make ',your product
more attractive to the',cust
omer than every
one else's.This ',is achieved
by controlling your ',pricin
g and advertisement ',expendi
ture successfully.',
4090 _DATA 'Unfortunately yo
u cannot rely on',ads alone,b
ut you need to price your',pr
oduct aggressively.',
You will first be given data about
',the previous month.From thi
s such',things as average pri
ce can be ',deduced.Then you
will be given y
our',own personal data.Follow
the prompts',
Monthly production of units can be
',only b
e varied by up to 5; price',i
ncreases have a limit of '70;
',increases in advertisement'
',expenditure have a limit of
'30.',
As regards to the c
omputer's skill
',level,the higher it is,the
longer it',will think,so if y
ou want a quick',game or are
playing a lot of',computer pl
ayers,keep it under 5.'
4100 _DATA '999'
4110 RESTORE #030:Repeat LOC
P

```

```

f1p1_BUSINESS 1961 Jul 14 23:1
6:36 Fri

```

```

4120 AT 18,0:READ A$:IF A$
='999' THEN EXIT LOOP:ELSE PRI
NT A$
4130 FOR N=1 TO 10:SCROLL
-1:PAUSE 2
4140 END Repeat LOOP
4150 AT #0,1,29:PRINT #0,"Pree
s any key.":PAUSE:SIZE #0,0,0
:CLS #0
4160 FOR N=1 TO 55:SCROLL -4
4170 END Define
4180 Define Procedure help1
4190 CLS #2
4200 PRINT #2,
" This screen shows data
about ALL the players. From
this screen,many facts can be
deduced. For example:- 1:The
average price per unit is the
PRICE OF SALES divided by th
e TOTAL SALES.
2:T
he average advertisement expen
diture is the ADVERTISEMENT
S divided by the number of p
layers.
The shor
t term forecast tells you how
the possible sales will vary

```

this month, and the long te
rm forecast in
dicates how the sales will be
the following month.

It is important to reme
mber that all the informatio
n that you see now is about ALL
the players and not just y
ou."
#210 CLS #0:PRINT #0:MID\$(P
ress any key.."):A=KEYROW(0):P
AUSE:CLS #0
#220 CLS #2:END Define
#230 Define Procedure help2
#240 LOCAL A\$,B\$
#250 BORDER #15,0,0:CLS #1
5
#260 _DATA

" This screen supplies th
e data personal to your compa
ny and no-one else should see i
t. You w
ill be asked to input how many
units you will make. This figu
re has got to be no more than 5
different to

```

f1p1_BUSINESS 1961 Jul 14 23:1
8:06 Fri

```

the figure labelled AMOUNT
PRODUCED.

Next you will be ask
ed for how much you are going t
o sell each unit for.You can d
rop your price by any amount
but you have a maximum increas
e limit of '70 over the PRODU
CT PRICE. Final
ly you will be asked for the
advertising expenditure. This
can be more than '30 over th
e previous month.How much you
spent last month on ads can b
e found by taking '300 away f
rom NON-PRODUCTION COSTS.

Never fo
rget that each unit costs '60
to make and you have other ov
er-heads which total '300 plus
your spending on adverts."
#270 RESTORE #260
#280 CLS #0:
#290 READ A\$
#300 Repeat hlop
#310 #0:IF LEN (A\$)<360 T
HEN B\$=A\$:F=1:ELSE B\$=A\$(1 TO
350)
#320 PRINT #15:B\$
#330 PRINT #0,MID\$(P
ress any key.."):PAUSE:CLS #0:CLS #
15
#340 IF F=1 THEN EXIT hlop
#350 A\$=A\$(361 TO LEN (A\$))
#360 END Repeat hlop
#370 BORDER #15,0,0:CLS #15:
BORDER #2,2,255
#380 CSIZE #0,0,0
#390 CLS #0:PRINT #0,MID\$(P
ress 'N' if you want help..")
#400 END Define
#410 Define Function under_cut
\$(qwert)
#420 LOCAL low
#430 low=ACCOUNT(qwert,4)

```

f1p1_BUSINESS 1961 Jul 14 23:1
9:20 Fri

```

```

#440 FOR QAZ=1 TO nopl
#450 IF ACCOUNT(QAZ,4)<low
THEN low=ACCOUNT(QAZ,4)
#460 END FOR QAZ
#470 IF low=ACCOUNT (qwert,
4) THEN RETURN ' '
#480 low=ACCOUNT(qwert,4)-1
ow
#490 RETURN "You are under-c
ut at the shops by"&CHR$(10)&"
"low
#500 END Define
#510 Define Function MID$(A$)
#520 LOCAL A
#530 A=36-(LEN(A$)/2)
#540 AT #0,1,A
#550 RETURN A$
#560 END Define
#570 Define Procedure CHK
#580 CLS:FOR N=1 TO nopl
#590 PRINT PNAMES(N)
#600 PRINT ACCOUNT(N,5),ACCOU
NT(N,4),ACCOUNT(N,8)-300
#610 NEXT N
#620 END Define
#630 Define Procedure CHKALL
#640 FOR N=1 TO nopl
#650 CLS
#660 PRINT PNAMES(N)
#670 FOR M=1 TO 10

```

```

4680 PRINT ACCOUNT (N,M)
4690 NEXT M
4700 PAUSE
4710 NEXT N
4720 END DEFINE
4730 DEFINE PROCEDURE INPUT_DA
TA
4740 PRINT @,MID$( "Press 'N'
' if you want help.." )
4750 CLS @
4760 PRINT @, "Amount Produc
ed":inp 2,0,15,AM
4770 IF ABS(AM-ACCOUNT(PNUM,
5))>5 THEN do_err "Please keep
your production figures withi
n 5 of last month.Press any ke
y.":GO TO 4750

```

```

File1_BUSINESS 1961 Jul 10 23:2
0:34 Fe1

```

```

4780 IF AM<1 THEN zero:GO TO
4750
4790 AT @,2,0:PRINT @, "Pri
ce Of The Product ":FILLS( '
',13):inp 2,4,22,PR
4800 IF PR-ACCOUNT(PNUM,4)>7
0 THEN do_err "Please keep you
r price to within 70 of last
month. Press any key.":GO TO 4
790
4810 IF PR<1 THEN zero:GO TO
4790
4820 AT @,2,0:PRINT @, "Adv
ertisements ":FILLS( ' ',19):i
np 2,8,16,AD
4830 IF AD-ACCOUNT(PNUM,8)+3
00>30 THEN do_err "Please incr
ease your ads spending by no m
ore than 30. Press any key.":
GO TO 4820
4840 IF AD<0 THEN zero:GO TO
4820
4850 CLS @:INPUT @:"ARE THES
E FIGURES CORRECT (Y/N) >":ANS
:ANS=ANS$"Y",IF ANS(1)=="N" TH
EN CLS @:GO TO 4740
4860 ACCOUNT(PNUM,5)=AM
4870 ACCOUNT(PNUM,4)=PR
4880 ACCOUNT(PNUM,8)=AD+300
4890 CLS @
4900 END DEFINE INPUT_DATA
4910 DEFINE PROCEDURE do_err (
qw$)
4920 CLSE@:PRINT @,MID$(qw$
):PAUSE:CLS @:PRINT@, MID$( "
Press 'N' if you want help.." )
4930 END DEFINE
4940 DEFINE PROCEDURE zero
4950 do_err "Please keep all
numbers above zero.Press any
key"
4960 END DEFINE

```

Modifications

The majority of the game is the same for both versions; the changes necessary are to remove the CALC procedure, as this is done by the Master, and to change the network output routines to input routines and vice versa. A new procedure has to be added so that the Slave can let the Master be aware of its presence.

How this works is that at the start all the Slaves are trying to send data to the Master. Obviously the Master can read from only one computer at a time, therefore one Slave at a

time is freed from sending data. The Master then sends a station number to the 'free' Slave and then sends preliminary details about the game. The Master then goes back to check for any more Slaves.

X HEAD

One idea I have is to dispense with the Slave and write a new Master which can decide whether it should be the one Master on the net or run in a

Slave mode. The problem is getting the computer to decide whether it should be the Master, Slave or stand-alone system, depending on what it hears on the net.

Also in the pipeline is a much more powerful game with more intelligent computer players, the Laws Of Diminishing Returns, workforce control, selection of a specific market each with different characteristics, full menu/joystick control and graphs of anything you want.

My address if you want the Slaves or have suggestions is 144 Lache Lane, Chester CH4 7LX.

DELETE FOLLOWING FUNCTIONS AND PROCEDURES AND ANY CALLS TO THEM:-

CALC, EXPORT, THE_END, GET, COL_NAMES, SEND_THE_DATA, BROADCAST, OTHER_PLAY, SEND, MONPER\$, XPOFY, FXOFY DELETE LINES 480 TO 680, 720, 750, 1690, 1640, 1650, 1660, 1670 400, 410 In QL_PLAY and PHOCALC replace the variable nopl by TNOPL.

Add these lines:-

```

355 END Repeat GAME_LOOP
335 LOG_ON:SEND_NAMES:GET_DATA
715 GET_PREV_MONTH
800 TRANSMIT_DATA
860 THE_END
1640 PRINT "SHORT TERM:":ST$
1650 PRINT "LONG TERM: ":LT$

```

RENUM THE PROGRAM

ADD THESE PROCEDURES :-

```

5000 DEFINE PROCEDURE log_on
5010 NET 1: OPEN #4,NETO_1
5020 PRINT @:"LOGGING ON":
PRINT @:"Q":
5030 CLOSE #4
5040 OPEN #4,NETI_1

```

```

5050 INPUT #4,STN:INPUT #4,
MONTHS:CLOSE #4
5060 NET STN:OPEN #4,NETO_1:
PRINT @: NOPL: CLOSE #4
: CLS #0

```

```

5070 END DEFINE LOG_ON
5080 DEFINE PROC SEND_NAMES
5090 OPEN #4,NETO_1
5100 FOR N=1 TO NOPL
5110 PRINT @,PNAME$(N)
5120 END FOR N
5130 CLOSE #4
5140 END DEFINE SEND_NAMES
5150 DEFINE PROCEDURE GET_DATA
5160 OPEN #4,NETI_1
5170 DIM ACCOUNT(NOPL,10),
MONTH_DATA(5),
PPTB(MONTHS),
ADVERT(MONTHS+6)
5180 FOR N=0 TO MONTHS:INPUT
#4,PPTB(N)
5190 FOR N=0 TO MONTHS+6:
INPUT #4,ADVERT(N)
5200 CLOSE #4
5210 END DEFINE GET_DATA
5220 DEF PROC TRANSMIT_DATA
5230 FOR N=1 TO NOPL
5240 OPEN #4,NETO_1
5250 PRINT #4,ACCOUNT(N,5)
5260 PRINT #4,ACCOUNT(N,4)
5270 PRINT #4,ACCOUNT(N,8)
5280 CLOSE #4
5290 END FOR N
5300 END DEFINE TRANSMIT_DATA

```

```

5310 DEF PROC GET_PREV_MONTH
5320 LOCAL N
5330 FOR N=1 TO NOPL
5340 OPEN #4,NETI_1
5350 FOR Q=1 TO 5:INPUT #4,
MONTH_DATA(Q)
5360 INPUT #4,PPTB:INPUT
#4,TNOPL
5370 FOR W=1 TO 10:INPUT
#4, ACCOUNT(N,W)
5380 INPUT #4,ST$:INPUT
#4,LT$
5390 CLOSE#4
5400 END FOR N
5410 END DEFINE GET_PREV_MONTH
5420 DEFINE PROCEDURE THE_END
5430 CLS
5440 AT @, 13 :UNDER 1:PRINT
"THE RESULTS" : UNDER 0
5450 OPEN #4,NETI_1
5460 DIM POSS(TNOPL,36)
5470 FOR N=1 TO TNOPL
5480 INPUT #4,POSS(N)
5490 END FOR N
5500 CLOSE #4:PRINT \
5510 FOR N=1 TO TNOPL
5520 IF N<10 THEN PRINT
" "
5530 PRINT N: " : POSS(N)
5540 END FOR N
5550 INPUT #0:"ANOTHER GAME ?
(Y/N) >":ANS:IF ANS(1)=="N"
THEN STOP
5560 RUN
5570 END DEFINE

```

QUANTA REPORT

Simon Goodwin
reports from
Birmingham

Miracle Systems QL hard disc had its first public showing at a crowded Quanta meeting in Birmingham. Scores of QL enthusiasts saw Tony Tebby demonstrate the prototype running his new drive-control software.

The drive is expected to sell for £399 when the software has been finished and optimised. At the time of the demonstration Tebby had the only working unit but production circuit boards were expected soon after.

The system is based round tried and tested hardware — a Western Digital filecard, often fitted in IBM PC systems. It uses an ST-506 interface, making it cheaper than CSTs SCSI drives, although slower.

The Miracles box contains an adapter to allow the PC card to interface with a QL system.

The hardware plugs into the QL cartridge port, the only suitable socket remaining once the machine is fully-expanded with the other large Miracle expansion product, the 768K Trump Card.

You do not have to use that expansion unit with the drive but the hard disc is really suitable only for an expanded QL, as it keeps a 30K file allocation table in memory at all times. A duplicate cartridge socket is mounted on the drive box, so you can still plug in ROMs like the CP/Mulator, Speedscreen or compiler dongles.

The formatted capacity is

15,997 sectors — almost 32 MB, as each sector is 2K long, rather than 512 bytes as on removable media. You need 45 720K floppy discs and a fair amount of time to back-up the contents of a full hard disc.

At the time of the demonstration the disc access code was incomplete but showed promise. The system could boot from hard disc but it could be disabled by putting a disc in floppy drive 1. Hard disc files could be loaded but not deleted and saving was not demonstrated.

A screen loaded from hard disc at roughly twice the speed of a floppy file but Tebby predicted that the maximum speed might be as much as five times that of a removable

disc once his code has been tweaked. Access time for small files should be better still.

Miracle hardware wizard Stuart Honeyball answered questions about the electronics. Other names among the throng included Dennis Briggs, Adman Services, Simon Goodwin, Creative Code-Works, John Wilk, PDQL and National Quanta secretary Phil Borman. Freddy Vachha of Digital Precision was expected to show his PC Emulator but did not appear.

The West Midlands QL group meets twice a month at the Holloway, a pub in the centre of Birmingham. It is one of many sub-groups of Quanta, The International QL User Group.



SPECIAL SUBSCRIPTION OFFER



From March 1989 issue, QL World will no longer be available at your newsagents.

To continue to keep in touch with the world of QL, subscribe now and benefit from our host of Special Offers.

Offers include: ● A Free Program from Microdrive Exchange . . . ● Free issue of QL World . . . ● Free entry to our QL competition . . . ● 15% Discount off the subscription price to anyone who subscribes before February 28, 1989.

● *PLUS . . . Assorted Fabulous Bargains on items and services for the QL.*



Take a year's subscription to Sinclair QL World and you can take your choice of One Free Program from Microdrive Exchange. You will also receive an extra issue Absolutely Free, an offer you would be crazy to refuse.

The cost: For U.K. £15 (£12.75 special offer up until February 28, 1989). Europe: Surface mail £30; Air Mail £35 (i.e. £25.50 and £29.75 under offer). Rest of World Air Mail £40 (£34 under offer).

All cheques, postal orders should be made payable to Focus Magazines. Please send me a year's subscription to Sinclair QL World.

Payment is by (please tick): Cheque ☐ Postal Order ☐ Access ☐ Visa ☐

My credit card number is

Expiry date

Program name

Number

Name

Address

..... Signed

Please send completed forms to:

Perry Trevers,
Sinclair QL World,
Focus Magazines,
Greencoat House,
Francis Street,
London SW1P 1DG.

 **FOCUS
MAGAZINES**

MICRODRIVE

KEY

B = Superbasic; A+O = assembler and object code; M+B = machine code and Basic loader; A+B+O = assembler and Basic loader and object code; S = supercharged; L = QLiberated; f1 = monitor mode; f2 = TV mode

1. DIY ASSEMBLER by Giles Todd (B) £5
A complete two-pass assembler which assembles all 68008 code and supports the directives DRG, END, EQU, DC and DS.

2. MINI MONITOR by Richard Cross (A + O) £3
Multi-tasks on the QL using only 3K of RAM. Dump registers, memory and ASCII m/c trace, register store, memory move and store, and jumps. *QL User*, October 1985.

4. GOLF by Shergold and Tose (B f2) £2
Up to 50 courses of varying difficulty with lakes, rivers, bunkers and trees. *QL User*, May, 1985.

5. PALADIN by Williams and Holliday (A + O) £5
All-machine code space-invaders game used as the basis of the games programming series beginning in April 1985.

7. PACMAN by Steve Deary (B) £1
Almost 20 screens of varying difficulty including an invisible maze. *QL User*, March 1985.

8. FAMILY TREE by Andy Carmichael (B) £3
Archive database for assembling and displaying large family trees. *Theory of Relativity*, *QL User*, July/August 1985.

9. COMPOSER by James Lucy (L) £3
Completed in *QL User*, October 1985, this QLiberated program allows you to compose, play and edit music, including tempo, staccato, legato and sharps.

17. CAD QL by Tony Quinn (S) £4
The QL is particularly suited to CAD. Includes rubber banding and user-definable symbols. *QL World*, September 1988.

19. STARPORT 2001 by Karl Jeffrey (M + B) £3
Galaxian-style arcade game with fast m/c entry. *QL World*, November 1986.

24. DESIGN 3D by J. F. Tydeman (S) £4
3D screen designs with the minimum of fuss. *QL World*, March/April 1987.

25. STELLARIS by D. Carmona (B f1) £4
Real-time space adventure against the computer, including economic simulations, lunar landing and superb graphics. *QL World*, June 1987.

29. BRIDGE by Peter Etheridge (B) £4
Excellent version including accurate bidding, automatic or manual card play, replay hands, save and load and more.

32. ADVENT2 by Phillip Sproston (B) £4
Arcade adventure with humour: rooms, robots and problems to keep you on your toes.

33. CLOCK by Leslie Fahidy (B f2) £3
On-screen clock to set or read the time. Education, *QL World*, June and July 1987; complete program.

34. QL CONVERSION/CALCULATOR (f2) £2
Weights and measures, conventions and reverse Polish, converts anything to anything. Menu-driven, easy to use.

35. QWHIST by John Wakefield (B) £3
You play south and the computer plays north against automatic east/west opponents. *QL World*, August 1987.

36. MAIL MERGE by Stanley Sykes (B f2) £1
Handy utilities providing mail merge and labeller for Quill files, plus a demo.

37. THE DOUBLE by P. G. Ives (B f2) £4
A large football strategy game. You manage a team through four divisions, buying and selling, boosting morale through the league and F.A. Cup season.

40. ROULETTE by Santiago Rublo (B) £3
Spanish/English version of the gambling game, including Leigh Pattern system to break the bank. *QL World*, September 1987.

44. COMPRESS by David Marsh (B) £2
Utility to compress SuperBasic files without losing the program structure.

45. SUPERBREAKOUT by R. Davidson (M + B) £2
Fast m/c version of the classic bat, ball and wall game. Optional double bats and/or balls.

48. YAHTZEE by Jason Price (B) £2
The popular dice-game with on-screen graphics. Easy and addictive. *QL World*, November 1987.

52. SPACE PODS by Simon Quinn (M + B) £3
Your lone ship must protect six energy pods against the aliens. Machine code. *QL World*, December 1987.

53. GRAPHIC WRITER by S. M. Walker (B) £2
A graphic design program which can save your pictures as SuperBasic commands for use in other programs. *QL World*, December 1987.

54. ZAPMAN by L. Miles (M + B) £3
Fast-action m/c version of the Pacman genre. Variable skill levels and maze formats.

55. ADVENTURE PLAYTIME by A. Pemberton (B) £3
An extensive adventure where you must complete tasks for the inhabitants of a strange land. coded messages and hints included.

56. SPACE INVADERS by Paul McKinnon (M) £3
Very fast, challenging version of the classic, with ugly aliens and protective shields.

57. SPELLED by Timo Salmi (B) £3
A complete spelling checker for Quill—lis files. 7,500 words automatically expandable. Required two cartridges and 512K expansion.

58. RADAR by Nigel Ford (B) £2
You are control, monitoring the skies, checking aircraft, scrambling jets to intercept UFOs and shooting down enemy aircraft.

59. DUNGEONS by Geoffrey Evelyn (B) £4
As wizard, superhero, megahero or elf you must explore the dungeons, fighting monsters and collecting treasure in this one- to four-player game. Needs two cartridges and an expanded QL.

60. SPEEDMIND by William Henderson (B) £3
A mastermind-style game played with coloured pages. You have 12 attempts at breaking the code against the clock. *QL World*, January 1988.

EXCHANGE

READY
TO RUN
SOFTWARE

61. COMPANDER by A. Quigley (M9) £1
Compresses screen designs into the smallest files we have seen from a similar routine. *QL World*, April 1988.

62. DOMINOES by Adrian Steen (B f2) £2
A version of the classic English dominoes to play against the computer. *QL World*, May 1988.

63. VICIOUS VIPER by Ian Humphreys (B) £3
A version of the snake game in Basic. "Simple, frustrating, addictive, playable." *QL World*, July 1988.

64. TAKTIX by Nigel Ford (B) £3
Six or more can play the computer in a fierce game of European conquest. Put aside at least an hour. *QL World*, July 1988.

65. DUAL DOMINOES by Heimo Geske (B) £4
Two addictive versions of European dominoes with splendid graphics, to be played in mode 4 against the computer.

66. FTIDY by Howard Clase (B) £4
"A very pleasant file handling front-end type program, very clear and simple to use" — *QL World* software editorial. Machine code data file handlers *Data-maker* and *Data-loader* are included in the package.

67. LEAGUE SECRETARY by C. B. Storey (B) £3
You enter the match results and this program updates the league tables. Suitable for any sporting league organised on the lines of the Barclays Football League.

68. TAB—EDITOR by Richard Williams (B, compiled) £3
A flexible text editor for easy entry and manipulation of listings. Includes simple movement through columns, full block copying, special SORT for tabular listings, and very flexible tabbing. "The author has taken a lot of trouble to get it right." Code available from author.

69. WORDSEARCH by David Watson (B) £3
Generates 20-word wordsearch puzzles with large-letter screen dumps using the Easel gprint—prt routine (which must be added by the user). "A nice program and different to the usual run of wordsearches" to appear in November.

70. QTRON by Axel Berle (M + B) £3
"Although arcade games are not my personal favourite, I liked this one — smooth graphics, excellent visually, and plenty of variety to maintain interest." MDX only.

71. CRITICAL MASS by Patrick Carter (B) £4
As numbers accumulate in close proximity to each other, they reach their critical mass and explode, blowing their neighbours off the board. Can you hold your position? "An original game which I enjoyed playing." *QL World*, December 1988.

72. BOXES/FOX AND HOUNDS (B) £4
Two SuperBasic games for the festive season. Keep your family amused for hours, get hooked yourself. *QL World* January 1989.

73. MULTIPLICATION TABLES by Ron Allpress (B) £3
An educational program with plenty of features. Ideal for teaching the next generation to memorise the multiplication tables, or revising your own if they are still shaky. *QL World*, February 1989.

74. GRAPH PLOTTER by John Banks (B) £3
Useful for visualising mathematical functions in two dimensional polar or cartesian coordinates. *QL World* March 1989.

75. BUSINESS GAME by David Smith (B) £4
A business simulator for any number of players, human or computer. The winner is the one who makes the most money! Networking capability available from author. See *QL World* April 1989.

ORDER FORM

No. of programs required	Total cost of programs £.....
No. of drives to be purchased	Cost of drives (£2 each) £.....
No. of drives sent by you	Sub-total £.....
Program ID numbers / / / / / / / /	Post and packing £0.75
	+ 15% VAT £.....
QL Gold Card Number	TOTAL £.....
(if any)	— 10% discount for QL Gold Card holder £.....
	TOTAL TO BE SENT £.....

Name

Address

Postcode

(BLOCK CAPITALS PLEASE)

Please copy on to Microdrive the programs which I have indicated by their ID numbers. I enclose a cheque/PO to the value of £..... payable to *Sinclair QL World*. I understand that *Sinclair QL World* undertakes to supply only these programs, copied on to one or two Microdrives per title as required, and accepts no liability for operation as defined by the authors. *QL World* cannot supply information about the programs other than that originally printed or supplied. Any article reprints must be ordered and paid for separately at £2 each (£3 overseas) inclusive of post and packing.

Please send your order form to Mike McKenzie, PO Box 74, Tonbridge, TN12 6DW Tel: 0892 832952.

MICRO ADS

QL POOLSWINNER VERSION 3.3 The Ultimate Pools Prediction Program

Improved Massive Database Poolswinner is a sophisticated pools prediction aid and took over 4,000 man hours to compile. It comes complete with large database with all matches played since 1960. All English and Scottish team names are included.

Forecast score draws and no score draws with built-in perm generator — mark your coupon direct from screen printer.

Successful! We guarantee that Poolswinner performs considerably better than chance. If you can prove otherwise we shall reimburse you.

Unique! The prediction formula calculates the efficiency of every team with present and past results. We have yet to see a predictor that uses this method. No tedious typing — uses single key team entry.

NO EXPANSION REQUIRED. ONLY £14.99
State MDV or FLP & size. Immediate despatch from:
Xenon, 24 Wharmiddle Street, Barnsley,
South Yorkshire S70 6BP.

SUPERTRACE. Watch Basic in action plus single step mode "indispensable". The most reasonably priced tool released. See August '87 QL World. On MDV. £5 including p&p. Stack Software, Great Wolford, Shipton on Stour, Warwickshire CV36 5NQ. Tel: 0608 74369.

SPELLMASTER. The new (50,000 word) dictionary for Spellbound. Only £5. Send formatted mdv, SAE, and cheque/PO made payable to Orion Press, The Mansion, 276A Gt Cheetham St West, Salford, M7 9DN. Flip owners note — an even larger (65,000 word) version out soon — cost only £7.50. — Tel 061 792 7820.

FOR SALE. Standard Sinclair QL. Psion software V2.35, Cartridge Doctor, 11 assorted microdrive cartridges, dust cover plus Brother M1009 printer, 50 cps Epson compatible inc sprocket feed. Full documentation on both. £125 excl postage. — Tel 061 980 6499 evenings.

FOR SALE: Sinclair QL computer, JM ROM, 640K memory. Dual 3 1/2" NEC disc drives with PCML interface. All housed in padded carrying case, £295. — Phone (0264) 23838 after 4.30pm.

INTERNATIONAL CRICKET. 128K/256K. Over 15K of sprites and fully controllable batting and bowling for £4.99 payable to Nigel Holder, 25 Beightons Walk, Healey, Rochdale, Lancashire OL12 6EA. (0706 39554).

FOR SALE: Sinclair QL computer, JM ROM, 640K memory, dual 3 1/2" NEC disc drives with PCML interface. All housed in padded carrying case, £295. — Phone (0264) 23838 after 4.30pm.

QL SUPPLIES

QL MEMBRANE£14.95
QL POWER SUPPLY£19.95

MICRODRIVE CARTRIDGES

Taken from the Psion 4 pack (Quill, Abacus, Easel, Archive) Can be reformatted

Price for 10£12.95
Price for 50£44.95
Price for 100£84.95

VAT INCLUDED. Add £1 carriage

Chq/PO to:

OMNIDALE LTD

23 Curzon Street, Derby, DE1 2ES.
Tel: 0332 291219

SD MICROSYSTEMS

THE QL BUSINESS SPECIALISTS

SMALL TRADERS PACK £24.95 (Version 2.3) Sales & Purchase Ledgers, VAT, Stock File, Mailing List/Labeler. INVOICER £10 extra.

GENERAL LEDGER £19.95 (all 3 for £50.00) Computerised Book-keeping/Reporting system

STOCK ACCOUNTING £39.95 (Expanded QLS) A new, integrated Stock Control and Invoicing package featuring a built-in price list.

All fully menu-driven & Epson-compatible.

SMALL TRADERS CLUB £12.00 (Annual subs) Support, Supplies, Updates, Small Newsletter

CHEQUES, POs or SAE FOR FURTHER INFORMATION

SD MICROSYSTEMS (DEPT QL), PO BOX 24

HITCHIN, HERTS, U.K. Tel: (0462) 675106

QL ROMS AND SPARES

ROMS. MGE (Spanish), MGF (French), MGG (German), JS (English), £20 each JM (English), £10

MDVS. Complete QL MDV Subunit £20. Head and Chassis £10. Microswitch £2. Motor £6. Rubber + Plastic Roller £2. MDV2 Stand-off spacer + screw £2. ULA £5. T 4,5,6,7 set £2. MDV pcb inc ULA £11. Prices include UK postage. Send SAE for price list of all QL spares.

Joe Atkinson, 36 Ranelagh Road, Ealing,
London W5 5RJ (Mail order only)

REPORT WRITER V1.0

"NOT JUST FOR TEACHERS!"

"REPORT WRITER" could be a valuable tool for anybody who has to write many similar, structured, objective reports. "REPORT WRITER" has already been used to write over 1,000 new style school reports.

Available from: Cottage Enterprises,
Mr S. A. & Mrs. L. A. Rapley,
6, Shorwell Close, Grantham,
Lincs NG31 7LL

Cost £14.99 — State mdv or 3 1/2" flp.
Send SAE for further details.

A.R.K. PROFESSIONAL EDITORS & DATABASES

PUBLIC DOMAIN SPY EDITOR DEMO: Send disc/cartridge + SAE.
UPGRADES: £8 + p&p each on receipt of original cartridge

SPY very fast multi-file universal editor	£14.95	(v3.1)
MASTER SPY multi-file multi-view editor	£29.95	(v1.6)
ARCHIVIST 128 general purpose database	£29.95	(v2.4)
ARCHIVIST 256 multi-file general database	£39.95	(v3.9)
BANKS OF PLANTS 950 plants for Archivist	£29.95	(v1.0)
CARDFILE 128 multiple addresses database	£14.95	(v3.2)
CARDFILE 256 multiple addresses database	£19.95	(v3.8)
MAILFILE 128 address & notes database	£14.95	(v3.0)
MAILFILE 256 address & notes database	£19.95	(v3.4)
LIBRARIAN 128 books & articles database	£19.95	(v1.8)
LIBRARIAN 256 books & articles database	£29.95	(v2.4)
MAILMERGE fast background job	£9.95	(v1.4)

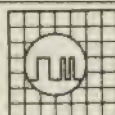


POSTAGE: UK Free, Europe £2, World £4, Swiftair - £2
CHEQUES: London Sterling payable to ARK DISTRIBUTION
REVIEWS: Please send in a stamped addressed envelope



Richard Howe & Angela Hammett
(Tel. 0983 79 496)

ARK Distribution, Corve Farmhouse, Chale Green,
VENTNOR, PO38 2LA, U.K.



QL REPAIRS

ANY FAULT £27.95 INCLUSIVE OF P&P, VAT
INSURANCE AND 3 MONTHS GUARANTEE.
FOR REPAIRS ON OTHER MICROS
PHONE FOR DETAILS.

SUREDATA

Telephone: 01-902 5218

UNIT 6, STANLEY HOUSE
STANLEY AVENUE, WEMBLEY
MIDDX. HA0 4JBQ

PROBLEMS WITH YOUR QL

FOR FAST, RELIABLE AND PROFESSIONAL
REPAIRS AT COMPETITIVE PRICES
Repair Cost: £25 inc. VAT + Free P & P
CST THORS also repairs — £25 + parts

Contact:

P M ENGINEERING



Unit 260, Milton Science Park,
Milton Road, Cambridge CB4 4BH.

Tel. 0223 420007



We can also supply you with hardware, software,
blank discs, accessories and spare parts

CAMBRIDGE COMPUTER Z88 THE COMPUTER FOR PEOPLE ON THE MOVE

Z88 32K Portable Computer	£262.50	Z88 Eprom Eraser	£33.90
*Z88 160K Portable Computer Pack	£314.95	Z88 Serial Printer Cable	£8.95
*Z88 544K Portable Computer Pack	£449.95	Z88 Parallel Printer Cable	£25.40
Z88 128K Ram Card	£42.50	Z88 BBC Link	£22.95
Z88 512K Ram Card	£184.95	Z88 PC Link	N.L.A.
Z88 128K Eprom Card	£42.50	Z88 PC Link II	£32.95
		Z88 Mac Link	£56.95
		Z88 Modem	£157.45

Post and Packing (orders less than £40.00)£2.50
Post and Packing (orders £40.00 or over) Free

*Packs include: Computer, one ram card, batteries, mains adapter, carrying case and revised manual.

Cheque or postal order please to:

DALE COMPUTING (Ref APC)

12 Allenfields, Allendale, Northumberland NE47 9DB

MICRO ADS

MORSE PRACTICE machine, internal on line Morse tutor. Many features, speeds up to 15wpm, state memory of your QL, £12 or large SAE for details. Fun Package of 3 games, £10. — Caravan Software, 23 Kenilworth Road, Ealing, W5. 01-840 6034 after 6pm only.

FOR SALE: 14" colour monitor £99; Lattice-C £65; Speedscreen £15; Project Planner £12; Warship £12; Complete set QL magazines £22; Qswitch £4; Keydefine £4; Qdos/Assembly Books £10. — M. Writtle 0734-666228.

UPS 50 uninterruptable power supply for the QL now with acoustic alarm, auto shut down and over 1 hour battery life on internal nickel cadmium batteries. Price £69 including VAT and postage. — Phone Frequency Precision Ltd. on 0805 4381 anytime!!

TWO 640K QLs with ICE, miscellaneous software, books, £60 each. CUB 653 monitor, £110. Hantarex green screen monitor, £50. Two Canon PW1080A printers, £100 each. — Tel John 01-240 3666.

2 NEW QL ADVENTURES

DREAMLANDS

By Jean-Yves Roussiac
For expanded QL's. Only £8.
(Disc or Microdrive)

McSPORRAN'S LAMENT

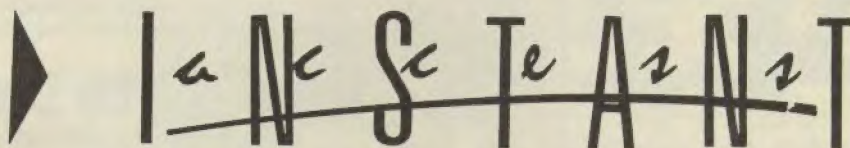
By Dave & Ann Watson
Runs on any QL. Written using ACT System
£8 Disc. £10 Microdrive
STILL AVAILABLE: 0 Day Mk II, Starplod,
From The Tower Valagon, QL Adventures Forum 1-6
CGH SERVICES Cwm Gwyn Hall, Pencader,
Dyfed, Cymru SA39 9HA. Tel: 055834 574

ALADDINK

Fabric Ribbon Cassette Re-inking

Trial Offer: £1.45 per ribbon
Post used cassette(s) with
payment to:

**Aladdink (Dept QL), Freeport,
Eyemouth TD14 5BR
(No stamp required)
Tel: 08907 50965**



HARDWARE

ABC Electronic

010 49 521 8980881

Care Electronics

0923 672102

Chromagraphics

04012 4699

C.S.T.

0438 352150

Data-Skip (Holland)

1820-20581

Digital Precision

01 527 5493
Disks, Interfaces, Drives, Keyboards,
RAM Expansions

Tony Firshman Services

01 724 9053

Miracle Systems

0272 603871

QJump

0954 50800

Sandy (UK) P.C.P.

0234 219814

Schon Keyboards

04865 3836

Strong Computer Systems

0267 231 246

T.K. Computerware

0303 812052

Tandata

06845 68421

Transform Ltd

089 283 4783

Q.L. World Readers Offers

01 834 1717

Wave

0229 44753 29109

P.D.Q.L.

021 200 2313
Memory Extension, Disk Drive, Z-88
and Printer

SERVICES

Adman Services

0952 55895

PM Engineering

0480 61394

Suredata

01-902 5218

Super User Bureau

PO Box 3, Shildon, DL4
2LW

0388 773737

Professional full-time support for
users of the QL, CST Thor and Com-
patibles. Many services including in-
dependent advice, computer supplies
and hardware and software

SOFTWARE

Athene Consultants

0329 283083

Best Malt Ltd

09946 370

Byteback

0836 79097

Caravan S/W

01-675 5074

Complex Data Systems (UK) Ltd

0635 68686

Compware

0270 582301

Task Swapper (Version 2), Computer

One Professional Monitor, Mega
Toolbox, Expert System Shell and
others

CPC

0772 555034

Datanet Systems

PO Box 121, Luton, Beds

Digitrix

0326 40529

Digital Precision

01 527 5493

Turbo Basic Compiler, Desktop
Publisher, Editor, Eye-Q Graphics,
Sprite Generator, Super Forth, Better
Basic, Professional and Super
Astologer, Media Manager,
Supercharge, Blocklands, Droidzone,
Arcadia, Reversi, Backgammon,
Master Bridge Tutor, CPM Emulator

DJW Software

0256 881701

Eidersoft QL

089 283 2552

The Mouse and everything else you
need for the QL

Escape software

01 478 8281

Intek Software

01 500 8534

Gap Software

01 552 5452

Javid Systems

041 552 0759

Liberation Software

01 546 7795

Maxtronics R & D Ltd (New Zealand)

63-3 325-546 or CHI SOFT (London)
01 458 7249

Metacomco

0272 428781

Micro Anvika

01 636 2547/580 6382

Microdeal

0726 68020

MPC Software

0602 820106 455114

Okoloko Engineering Software (USA)

313 485 1926

P.D.Q.L.

021 200 2313
General Business and Archive
Utilities and Applications

Pyramide S/W

089 283 2952

The Best Games and lots more!

Quantum Computing (USA)

201 328 8846

Sector S/W

0772 454328

QL and Z-88 Software and Hardware

SD Microsystems

0462 675106

Our range of low-cost business and
practical programmes includes Small
Trader Pack

Shadow Games

0646 651515

Smiling Software

061 427 5245

Talent Computer Systems

041 552 2118

TK Computer Systems

093 924 621

WD Software

0534 81392

Q.L. World Reader Offers

01-834 1717

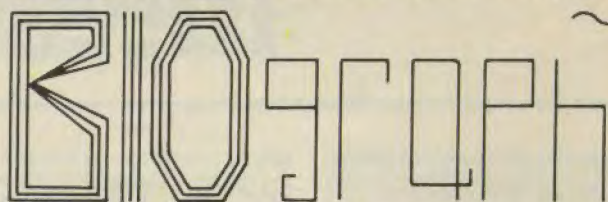
Zeataline Projects Ltd

0522 792378

ADVERTISERS' INDEX

ABC Electronics	13
Care Electronics	17
De Bondt Electronics	29
Digital Precision	4,5,6,7
EEC Ltd	50
Eidersoft	OBC
Emsoft Ltd	37
ImaQLate Software	50
Miracle Systems	14,15
PDQL	21,22,23
Quanta	13
Schön Products	IFC
Sector Software	32,33
Silica Shop	IBC
Software 87	25
Strong	29
Talent	25
TK Computing	8
Tony Firschman Services	37
UK Home Computers	50

Thinking of asking the boss for a rise?
Planning to buy yourself a new home?
Working up the energy to redecorate the house?
Whatever you're doing find the best time to do it with:



THE WORLD OF BIORYTHMS AT YOUR FINGERTIPS

The ultimate biorhythm prediction program!

- So easy to use and so much fun too
- Monitor your highs and lows with total ease
- Selectable one-month or six-month displays
- Analysis for any day of any month in any year
- Personality compatibility profile — very revealing!
- Full printing of screens and analyses
- An invaluable aid to business efficiency

Excellent introductory manual and FREE book

"It is slick, neat, fast, easy to use,
and well laid out" — QL World review (March '89)

So don't hesitate —
just send £20 sterling by cheque or postal order to:

imaQLate software

42 ALBION STREET, BROADSTAIRS,
KENT CT10 1NE.

■ Get the most out of everyday with BIOgraph

YOUR PROGRAM FOR LIFE!

EEC LTD

QL

★ QL BARGAINS ★

QL with J.S. ROMS original boxes complete with
full instruction book. Latest software pack. As new.

£140

inc VAT
With JS ROM

As above factory refur-
bished but with
condensed box.

£110

inc
VAT

With
J.S. ROM

£120

inc VAT
With JS ROM

★ SEIKOSHA SP800 D/M GRAPHICS PRINTER ★

80 column, 80 cps draught, 20 cps NLQ, low noise
level, friction and tractor feed, with serial to parallel
interface

£159.95

inc VAT
With JS ROM

★ LEADS & INTERFACES ★

Cent I-Face £19.95 — Serial Lead £6.95
Sureshot Joystick with QL Lead £12.95 — PSU £14.95
(Spares/microdrives, etc. Please send for lists)

★ SINCLAIR SOFTWARE ★

QL Integrated A/CS, Project Planner, Entrepreneur,
Cash Trader, Decision Maker, Home Finance,
Monitor, Macro-Assembler

Hisoft Mon., QL, cart & Super B, Ext. RON **£19.95 ea**

Chess, QL Pawn, Jabber, Cuboids, Meteor Storm,
Gardener, Bridge-Player, Hyper Drive **£9.95 ea**



Terms: CWO • Access or Visa
Minimum order £10.00 p&p £6.00. Printers and QL.
Other items £3.00. Overseas enquire.

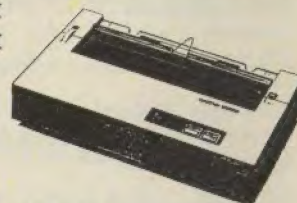


EEC LTD

18-21 Misbourne House, Chiltern Hill,
Chalfont St Peter, Bucks, SL9 9UE.
Tel: 0753 888866. Fax: 0753 887149

★ BROTHER HR5 PRINTER ★

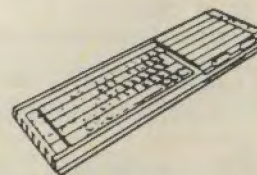
- ☆ 30 CPS ☆ 9-pin dot matrix
- ☆ Very quiet and lightweight
- ☆ Epson compatible
- ☆ Battery or mains
- ☆ Thermal or ink print
- ☆ Standard Centronics



£59.95 plus £3.05 postage
including mains adaptor

★ sinclair QL ★

- ☆ Fast 68008 Processor
- ☆ 128K RAM
- ☆ Multi Tasking
- ☆ RS232 Ports
- ☆ Twin fast access microdrives
- ☆ Monitor and TV outputs
- ☆ 4 free business programs



We also stock QL Software at discount prices.
Send today for our list!

JS ROMS £99.95 JS ROMS £119.95

UK HOME COMPUTERS



82 Churchward Avenue, Swindon, Wilts.
Tel: (0793) 695034



FREE! TENSTAR PACK WORTH OVER £229!



FREE! - AMEGAS - by Players



FREE! - INSANITY FIGHT - by Microdeal



FREE! - ART OF CHESS - by SPA



FREE! - MERCENARY COMP - by Novagen



FREE! - BARBARIAN, ULT WARRIOR - by Palace



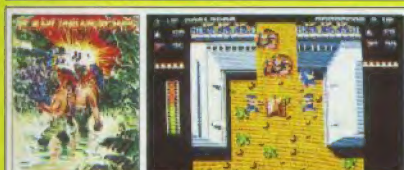
FREE! - TERRORPODS - by Psygnosis



FREE! - BUGGY BOY - by Elite



FREE! - THUNDERCATS - by Elite



FREE! - IKARI WARRIORS - by Elite



FREE! - WIZBALL - by Ocean

Commodore AMIGA



ONLY **£346.95** +VAT= **£399**
INCLUDES FREE UK DELIVERY

The Amiga 500 is one of a new breed of technologically advanced computers, which are now emerging as the new standard for home computing, based around the new Motorola 68000 chip. The A500 has 512K RAM and a 1Mbyte double sided disk drive built-in. It can be connected directly to a wide range of monitors, or to a domestic TV set through a TV modulator. Designed with the user in mind, the A500 features a user friendly WIMP environment and comes supplied with a free mouse. And, when you buy your Amiga from Silica Shop, the UK's No1 Amiga specialists, you will experience an after sales service that is second to none, including a technical support helpline and free newsletters and price lists. Return the coupon below for our current information pack, which will give details of the Silica service and the very latest Silica Amiga offers. E&OE

WHY SILICA SHOP?

Before you decide when to buy your new Commodore Amiga computer, we suggest you consider very carefully WHERE you buy it. There are MANY companies who can offer you a computer, a few peripherals and the top ten selling titles. There are FEWER companies who can offer a wide range of products for your computer as well as expert advice and help when you need it. There is ONLY ONE company who can provide the largest range of Amiga related products in the UK, a full-time Amiga specialist technical helpline and in-depth after sales support, including free newsletters and brochures delivered to your door for as long as you require after you purchase your computer. That one company is Silica Shop. We have been established in the home computer field for ten years and can now claim to meet our customers requirements with an accuracy and understanding which is second to none. Here are just some of the things we can offer you:

THE FULL STOCK RANGE: The largest range of Amiga related peripherals, accessories, books and software in the UK.

AFTER SALES SUPPORT: The staff at Silica Shop are dedicated to help you to get the best from your Amiga.

FREE NEWSLETTERS: Mailed direct to your home as soon as we print them, featuring offers and latest releases.

FREE OVERNIGHT DELIVERY: On all hardware orders shipped to Silica Shop customers within the UK mainland.

PRICE MATCH PROMISE: We will normally match our competitors offers on a 'same product same price' basis.

FREE TECHNICAL HELPLINE: Full time team of Amiga technical experts to help you with your technical queries.

But don't just take our word for it. Complete and return the coupon below for our latest Amiga literature and begin to experience the Silica Shop specialist Amiga service.

PHOTON PAINT PACK

A500 Computer	£399.99
TV Modulator	£24.99
Photon Paint	£69.95
TenStar Pack	£229.50
TOTAL RRP:	£724.43
LESS DISCOUNT:	£325.43
PACK PRICE INC VAT:	£399

1084S MONITOR PACK

A500 Computer	£399.99
1084S Colour Monitor	£299.99
Photon Paint	£69.95
TenStar Pack	£229.50
TOTAL RRP:	£999.43
LESS DISCOUNT:	£350.43
PACK PRICE INC VAT:	£649

FREE FROM SILICA

When you buy the Amiga 500 from Silica Shop, you will not only get a high power, value for money computer. We will also give you some spectacular free gifts. First of all, we are now including a TV modulator with every A500 stand alone keyboard, so you can plug your Amiga straight into your TV at home (the modulator is not included with the A500+A1084S pack as it is not required for use with monitors). Secondly, we have added a free copy of Photon Paint, an advanced graphics package with an RRP of £69.95. Last (and by no means least!), so that you can be up and running straight away, we are giving away the sensational TENSTAR GAMES PACK with every A500 purchased at Silica Shop. This pack features ten top Amiga titles which have a combined RRP of nearly £230! Return the coupon for details.

FREE TENSTAR PACK

Amegas	£14.95
Art Of Chess	£24.95
Barbarian, Ult Warrior	£19.95
Buggy Boy	£24.95
Ikari Warriors	£24.95
Insanity Fight	£24.95
Mercenary Comp	£19.95
Terrorpods	£24.95
Thundercats	£24.95
Wizball	£24.95

TOTAL RRP: £229.50 INC VAT

DO YOU OWN AN AMIGA?

If you already own an Amiga computer and would like to be registered on our mailing list as an Amiga user, let us know. We will be pleased to send you copies of our price lists and newsletters FREE OF CHARGE as they become available. Complete the coupon and return it to our Sidcup branch and begin experiencing a specialist Amiga service that is second to none.

SILICA SHOP:

SIDCUP (& Mail Order) 01-309 1111
1-4 The Mews, Hatherley Road, Sidcup, Kent, DA14 4DX
OPEN: MON-SAT 9am - 5.30pm LATE NIGHT: FRIDAY 9am - 7pm

LONDON 01-580 4000
52 Tottenham Court Road, London, W1P 0BA
OPEN: MON-SAT 9.30am - 6.00pm LATE NIGHT: NONE

LONDON 01-629 1234 ext 3914
Selfridges (1st floor), Oxford Street, London, W1A 1AB
OPEN: MON-SAT 9am - 6.00pm LATE NIGHT: THURSDAY 9am - 8pm

To: Silica Shop Ltd, Dept SQLW 4/89, 1-4 The Mews, Hatherley Road, Sidcup, Kent DA14 4DX.
PLEASE SEND ME FREE LITERATURE ON THE AMIGA

Mr/Mrs/Ms: Initials: Surname:

Address:

Postcode:

Do you already own a computer
If so, which one do you own?

**COMBINED MDV T'KIT £19.95**

MDV and ALMDV toolkits on one microdrive

FORTH £29.95Professional Forth 83 compiler
● Fast and compact ● Many extensions**Computer One Professional Monitor — NEW — £39.95**
(Upgrade price £20.00 if you return old cartridge — You need to keep the old manual)**New features:**

- Symbolic debugging including symbol management
 - Integral 68000 assembler for single/multi-line assembly from files.
 - Include files.
 - Dual screen debugging.
 - Function key control of monitor clones.
 - Function key control of monitor clones.
 - New commands: ass, noass, =, nojob, include, noinclude, nosymbols, noeval, swap, noswap, noclines, noflags, error, escape, sleep, base, ...
- All of the above in addition to:
- Integral disassembler
 - Tracing of code in RAM or ROM
 - Move and search memory
 - Queue tracing
 - Memory modify and display
 - Breakpoints in RAM or ROM
 - Full job inspection and control
 - Configurable multi-window display

ICE**LOOK FOR SPECIAL OFFERS**ICE — £26.95 + Choice Multitasking Program
£14.95 + Toolkit especially for ICE users £14.95. *Limited while stocks last*

ICE is a ROM based utility program that turns your QL with an ICON controlled "state of the art" computer. Not only does it add a number of functions not found in a standard QL including calculator and calendar, it also makes all basic functions a dream to use.

ICE + MOUSE **Was £79.95**
NOW £59.95p The Eidersoft mouse combined with the above ICE ROM gives your QL the power of the Apple Macintosh or GEM Mouse control is implemented on all packages that use the ICE system, which gives a very smooth and fast response that will not be out of you already have ICE. We offer £10.00 trade-in if you return your existing ICE.

ARTICLE OR MOUSEART **£14.95p**
A keyboard or mouse controlled graphics program. The features include circle, line box, freehand draw, paintbox colours and brushes, copy transfer and save image. Epson printer dump, undo, spray can, recolour, text, mode 4 and 8 operation.

ICICLE **£14.95p**
A multi-tasking utility that allows you to set up your own ICONS for the control of programs, including QUILL, ABACUS and a host of other programs. As well as a full ICON editor it includes a printer spooler and printer manager.

DRAWING OFF-ICE **£24.95p**
3D screen designer aimed at producing true 3D images on your screen. The perspective is automatically calculated to a given vanishing point. This is not some complex co-ordinated program which requires you to work out every point of the 3D object in advance. Requires 3 1/2" disk drive. This program now includes version of mouse art. Expanded memory required.

NEW PUBLISHING OFF-ICE £24.95p
Incorporating an enhanced version of mouse art. Everything you need to design your newspaper or publication. Disk + Expanded Memory only required.

GAMES**JUST BACK!! *SCRABBLE**

A great version of an old favourite. One to four players, 8 skill levels, 12,000 word dictionary.

Only £12.50
Summer Reduction. Limited time only

BJ RETURNS **£10.95p**
Is the excellent sequel to QL Caverns incorporating many of the excellent features and graphics of the original game.

BJIN 3D LAND **£10.95p**
BJ is lost again! This time in a 3D maze that will pose a challenge to all 70 screens.

***KARATE** **Was £19.95 NOW £12.50**
Incredible graphics. 18 different movements including kicks, punches and somersaults. Multi screen action, large flicker free sprites, multi player option, sound effects, keyboard or joystick.

SPOOK **£10.95p**
Probably one of the best versions of Pacman for any Micro computer.

GAMES PACK **£16.95p**
Comprising of ZAPPER, the classic arcade game. Eagle a defender type game and Citadel where you must unravel the secrets of a giant city as you steer your craft through 50 screens of danger and excitement and, finally, BJ returns.

NEW!**COMPUWARE****1 TO 1 DUMP £5.99**

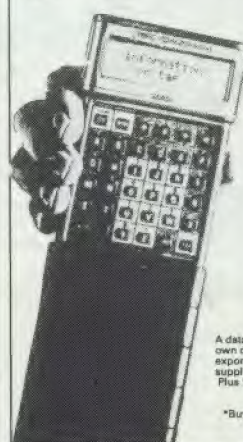
Undistorted screen dump to an Epson FX80 printer

ALMDV TOOLKIT £14.95

1000 lines of commented source code for mdv header and sector access

ORGANISER

The machine that thinks with you

From **£99.00**

- Diary
- Alarm
- Calculator
- Address Book
- Organiser II CM
- Organiser II XP
- Finance Manager
- Dictionary
- Comms link
- Spreadsheet
- 6K datapak
- 32K datapak
- 64K datapak
- 128K datapak
- Book on Organiser
- QL to Organiser
- Leather case for Organiser, battery and datapak
- Nylon waterproof protective bag
- Holster
- Real leather organiser fax. Holds organiser, tax paper and pens

OBASE

A database creator, allows you to create your own database, 6 different field types. Import, export to archive, use main database supplied. 32K datapak. Not copy protected. Plus free calculator to calculate +, -, / and %

£69.95

*Buy a leather fax case and save 10% on any other Organiser purchase

BOOT 128K £5.99

Run "128K only" programs in your expanded QL

ASSEMBLER £19.95The fastest QL Assembler.
● Editor ● Linker**QL PASCAL £29.95**Exceeds the ISO standard!!
● Fast ● Efficient
● Simple to use ● Professional**MULTI-PRINT £5.99**

Print multiple copies of files with this multitasking program

MONITOR £15.95Powerful full featured debugger
● Many unique facilities.**COPYCAT £10.99**

Backs up most protected cartridges in no time.

TYPING TUTOR £14.95

Professional tuition in easy steps. ● Speed and accuracy measurement.

PRO-MONITOR £29.95

As monitor plus symbolic debugging (return old cart. + £15 to upgrade).

MDV TOOLKIT £9.99

Extensions to read/write mdv sectors, headers, etc.

TASK SWOPPER (Version 2) NEW £19.95

(Upgrade price £10.00 if you return your old Task Swopper manual)

New features:

- True job cloning. (Saves memory, eg: 3 Psion clones in a 640K QL leaves 400K free!)
 - Ready made and easily customised start-up menu program.
 - Automated printer driver selection (useful for program swapping and also for selecting different typesets from your printer).
 - Automated set up of the QL clock minimises typing by remembering the year/month/day.
 - Multitasking clock program.
 - Compatible with the WL front end program GATS.
- All these features, and Task Swopper still only uses 10K of RAM, and is compatible with floppy discs, ROM toolkits, RAM discs and useful utilities such as QL Keydefine.

MEGA TOOLBOX — NEW — £29.95

(Demonstration cartridge — Redeemable against purchase: £10.00)

This is not just another run-of-the-mill QL toolkit. It adds over 168 new commands to QL, basic, and truly breaks new ground. extensive and original use is made of the QL's multi-tasking ability, enabling the basic programmer to perform wonders, even if he wants to compile his programs.

Main Features:

- Designed for use by serious programmers and software houses.
- Improved control of CDS resources (including memory, keyboard, pipes, files, jobs, alarm clocks and tune playing jobs).
- Windows/graphics (saving, restoring, copying, mirroring — optional compression).
- New keyboard input driver for better command line editing.
- Drawing/text printing commands (eg 3D text), ideal for constructing animated slide-shows for games/advertising, etc.
- Dual screen handling (copying, swapping, automated screen mode control).

Here are just 33 of the 168 new commands: FREE_MEM, ALCP, RCHP, MCOPI, MFILE, MSEARCH, FACT, DAYS, UPPERS, LOWERS, HEX, BIN, DEC, FILE_LEN, PPOS, GET, PUT, KEYBOARD, ENTER, ACTIVATE_Q, STICK PROMPTS, JOBS, JOB_STAT, REMOVE, PIPE_ID, CONNECT, SET_FONT, PRINT_3D, MPRINT, EXPAND, HIDE, SHOW, ZOOM, PRINT_X, SLIDE_X, ALARM_X, OTRAP, QCALL.

EXPERT SYSTEM SHELL NEW — £49.95

This is a serious tool designed both to introduce the novice to the design of expert systems, and to be used for serious expert system work. The expert system programmer can construct sophisticated rule based systems and put them into real applications. A tutorial will help you learn how to design an expert system and for ease of use, context sensitive help is provided.

Main Features:

- Tokenised rules save money (about 100 rules in a 128K QL).
- Precompiled expressions for fast rule evaluation.
- Intelligent searching and pre-scanning of rule base.
- Boolean and fuzzy logic plus user definable probability relationships.
- Foraging of input and output and ability to construct menus for the user.
- Original constructs: FIRST OF, MIN OF, MAX OF, ALL OF
- Conditional operators: =, <, >, <=, >=, < >, < <=, > >=
- Multiple goal paths ... and much more.

UTILITIES**GRAPHICS CONSTRUCTION KIT £14.95p**
A set of utilities that allows you to construct your own pull-down menus in SUPERBASIC.

Q-SWITCH **£14.95p**
Multi-tasking that permits a quick switch from ARCHIVE to ABACUS QUILL or EASEL, suspending tasks while jumping to another task. Written by the author of ICICLE and KEYDEFINE this is a very popular package.

QSPELL **£24.95p**
A spelling checker for Quill, supplied with a dictionary of 250,000 words and checks an A4 page in 24 secs.

Q-FLASH RAM DISK **£14.95p**
Allows the user to define RAM disc, programs can then be instantly saved and re-loaded. A print spooler is also included to allow you to print whilst using the programs.

QL to PC **£29.95p**
Transfer your existing files to a PC for use within XCHANGE, PC FOUR or any standard DATABASE SPREADSHEET or WORDPROCESSOR. Price includes software for both machines and cable.

QL TO ORGANISER **£39.95p**
Transfer both ways your existing QL files within exchange. Complete with software and cable.

QL TECHNICAL BOOKS (Set of 7) *Special price to clear £12.95p
PC FOUR for IBM compatibles **Our price £69.00p ex VAT**

Microdrive Storage Box **£4.95p**
Microdrive Storage Box with 10 cartridges **£22.45p**
Microdrive Storage Box with 20 cartridges **£39.95p**

WE SELL MOST QL PRODUCTS — PHONE FOR DETAILS**AMAZING****SPRING OFFER****FREE****TRANSFORM STORAGE BOX WITH FIRST 100 ORDERS. VALUE £495.00**